



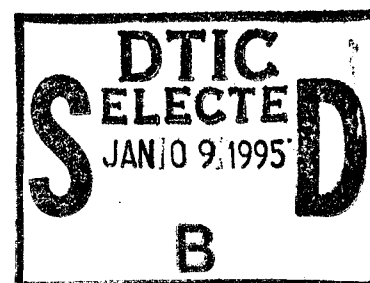
NRL/FR/5220--94-9378

## Bibliography of NRL Publications — 1990

EILEEN A. PICKENPAUGH  
KENNETH L. THOENES  
ALICE B. COX  
RICHARD W. PEACOCK

*Ruth H. Hooker Library and Technical Information Center  
Technical Information Division*

December 6, 1994



19950105 021

REPORT DOCUMENTATION PAGE			Form Approved OMB No. 0704-0188	
Public reporting burden for this collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302, and to the Office of Management and Budget, Paperwork Reduction Project (0704-0188), Washington, DC 20503.				
1. AGENCY USE ONLY (Leave Blank)	2. REPORT DATE  December 6, 1994	3. REPORT TYPE AND DATES COVERED  Bibliography 1990		
4. TITLE AND SUBTITLE  Bibliography of NRL Publications — 1990			5. FUNDING NUMBERS	
6. AUTHOR(S)  Eileen A. Pickenpauh, Kenneth L. Thoenes, Alice B. Cox, and Richard W. Peacock				
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)  Naval Research Laboratory Washington, DC 20375-5320			8. PERFORMING ORGANIZATION REPORT NUMBER  NRL/FR/5220-94-9378	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)			10. SPONSORING/MONITORING AGENCY REPORT NUMBER	
11. SUPPLEMENTARY NOTES				
12a. DISTRIBUTION/AVAILABILITY STATEMENT  Approved for public release; distribution unlimited.			12b. DISTRIBUTION CODE	
13. ABSTRACT (Maximum 200 words)  This report lists Naval Research Laboratory papers published in periodicals, books, and proceedings, and Naval Research Laboratory in-house publications including formal and memorandum reports, which became available in 1990. Patents received by Naval Research Laboratory personnel in the year of 1990 are also listed as they appeared in <i>Patent Issue Report</i> published by the Naval Research Laboratory Patent Office.  The papers are listed in the following broad subject categories: acoustics; artificial intelligence; atmospheric sciences; biosciences; ceramics, glasses, and plastics; chemistry; communications; computer sciences; electronics and electricity; fluid mechanics; geosciences; information; instrumentation; laser science; magnetism; mathematics; mechanics; metallurgy; nuclear science; ocean science and technology; optical sciences; physics; plasma physics; radar; radiation technology; solid state; space science and technology; and structure research. Within each subject category, papers are listed alphabetically by title as are the in-house publications and patents appearing after the listing of papers. An * following an author's name indicates that author was not an employee of the Naval Research Laboratory. An author index is included.				
14. SUBJECT TERMS Acoustics; Artificial intelligence; Atmospheric chemistry; Atmospheric physics; Biochemistry; Biophysics; Biotechnology; Ceramic materials; Chemistry; Communications and radio systems; Computers; Electronics; Fluid mechanics; Mathematics; Geophysics; Glass; Information systems; Information theory; Instrumentation; Lasers; Magnetic properties; Mechanics; Metallurgy; Naval research; Nuclear physics; Oceanography; Optics; Patents; Physics; Plasmas (physics); Plastics; Radar; Radiation; Reports; Scientific literature; Solid state electronics; Space sciences; Structural properties			15. NUMBER OF PAGES  87	
			16. PRICE CODE	
17. SECURITY CLASSIFICATION OF REPORT  UNCLASSIFIED	18. SECURITY CLASSIFICATION OF THIS PAGE  UNCLASSIFIED	19. SECURITY CLASSIFICATION OF ABSTRACT  UNCLASSIFIED	20. LIMITATION OF ABSTRACT  UL	

# Table of Contents

1990 Papers Published in Periodicals, Books, and Proceedings . . . . .	1
Acoustics . . . . .	1
Artificial Intelligence . . . . .	4
Atmospheric Sciences . . . . .	4
Biosciences . . . . .	6
Ceramics, Glasses, and Plastics . . . . .	6
Chemistry . . . . .	7
Communications . . . . .	12
Computer Sciences . . . . .	12
Electronics and Electricity . . . . .	14
Fluid Mechanics . . . . .	17
Geosciences . . . . .	17
Information . . . . .	18
Instrumentation . . . . .	18
Laser Science . . . . .	19
Magnetism . . . . .	21
Mathematics . . . . .	22
Mechanics . . . . .	22
Metallurgy . . . . .	23
Nuclear Science . . . . .	25
Ocean Science and Technology . . . . .	25
Optical Sciences . . . . .	25
Physics . . . . .	29
Plasma Physics . . . . .	33
Radar . . . . .	37
Radiation Technology . . . . .	38
Solid State . . . . .	38
Space Science and Technology . . . . .	52
Structure Research . . . . .	57
1990 In-House Publications . . . . .	59
1990 Patents . . . . .	69
Author Index . . . . .	73

## INTRODUCTION

This report lists Naval Research Laboratory papers published in periodicals, books, and proceedings and in-house publications, including formal and memorandum reports, that became available in 1990. Patents received by Naval Research Laboratory personnel in 1990 are listed as they appeared in *Patent Issue Report* published by the Naval Research Laboratory Patent Office. An author index is also included.

The papers are listed in the following broad subject categories: acoustics; artificial intelligence; atmospheric sciences; biosciences; ceramics, glasses, and plastics; chemistry; communications; computer sciences; electronics and electricity; fluid mechanics; geosciences; information; instrumentation; laser science; magnetism; mathematics; mechanics; metallurgy; nuclear science; ocean science and technology; optical sciences; physics; plasma physics; radar; radiation technology; solid state; space science and technology; and structure research. Within each subject category, papers are listed alphabetically by title as are the in-house publications and patents, which appear after the listing of papers. An asterisk (\*) following an author's name indicates that the author was not credited as being a member of the Naval Research Laboratory's staff.

<b>Accession For</b>	
NTIS GRA&I	<input checked="" type="checkbox"/>
DTIC TAB	<input type="checkbox"/>
Unannounced	<input type="checkbox"/>
Justification	
By	
Distribution/	
Availability Codes	
Dist	Avail and/or Special
A-1	

# 1990 Papers Published in Periodicals, Books, and Proceedings

## Acoustics

**Accuracy of Transient Propagation Models**, by Dacol, D.K. and Dunyak, J.P., *First Acoustic Transient Workshop*, Naval Research Laboratory, 1989, pp. 501-514.

**Acoustic Coatings for Water-Filled Tanks**, by Corsaro, R.D., Covey, J.F., Young, R.M.\*, and Spryn, G.\*, *Sound and Vibration Damping with Polymers*, American Chemical Society, 1990, pp. 208-228.

**Acoustic Levitation in a Free-Jet Wind Tunnel**, by Seaver, M., Galloway, A., and Manuccia, T.J., *Review of Scientific Instruments* **60**:3452-3459, 1989.

**Acoustical Properties of Some Interpenetrating Network Polymers. Urethane-Epoxy Networks**, by Ting, R.Y., Capps, R.N., and Klempner, D.\*, *ACS Symposium Series* **424**:366-381, *Sound and Vibration Damping with Polymers*, American Chemical Society, Washington, D.C., 1990.

**Analysis of Thermoacoustic Wave Propagation in Elastic Media**, by Rudgers, A.J., *Journal of the Acoustical Society of America* **88**:1078-1094, 1990.

**An Analytical Solution for Benchmark Problem I: The "Ideal" Wedge**, by Buckingham, M.J.\* and Tolstoy, A., *Journal of the Acoustical Society of America* **87**:1511-1513, 1990.

**Applications of Thermal Analysis in the Development of Elastomers for Underwater Acoustic Applications**, by Capps, R.N. and Samuels, M.Q., *Eighteenth North American Thermal Analysis Society Conference*, North American Thermal Analysis Society, 1989, pp. 793-801.

**Benchmark Calculations for Higher-Order Parabolic Equations**, by Collins, M.D., *Journal of the Acoustical Society of America* **87**:1535-1538, 1990.

**Broadband Radiation Patterns of Cylindrical Shells**, by Menton, R.T., *First Acoustic Transient Workshop*, Naval Research Laboratory, 1989, pp. 515-524.

**Calibration of Underwater Acoustic Transducers at NRL/USRD**, by Van Buren, A.L. and Blue, J.E., *Second International Workshop on Power Transducers for Sonics and Ultrasonics*, Toulon Var Technologies, 1990, pp. 1-45.

**Computational Aspects of Matched Field Processing in Underwater Acoustics**, by Tolstoy, A., *Computational Acoustics: Proceedings of the 2nd IMACS Symposium*, Vol. 3, North-Holland, 1990, pp. 303-310.

**Conformal Generalized Near-Field Acoustic Holography for Axisymmetric Geometries**, by Borgiotti, G.V.\*, Sarkissian, A., Williams, E.G., and Schuetz, L., *Journal of the Acoustical Society of America* **88**:199-209, 1990.

**A Constrained Newton Algorithm for Maximum Likelihood Modeling of Sums of Exponentials in Noise**, by George, J.D.\* and Ainsleigh, P.L., *ICASSP 90 Volume 5. Spectral Estimation; Underwater Signal Processing*, IEEE, NY, 1990, pp. 2443-2446.

**Correlations Among the Modal Components of the Field of a Moving Source: Low Frequency Doppler Effects in Shallow Water**, by Gragg, R.F., *Journal of the Acoustical Society of America* **88**:2326-2337, 1990.

**Effectiveness of Mode Filtering: A Comparison of Matched-Field and Matched-Mode Processing**, by Yang, T.C., *Journal of the Acoustical Society of America* **87**:2072-2084, 1990.

**The Effects of Ionizing Radiation on SAW Resonators**, by Hines, J.H.\* and Stapor, W.J., *1990 IEEE Ultrasonics Symposium*, IEEE, NY, 1990, pp. 471-476.

**Electrical Resistivity of Carbon-Black-Loaded Rubbers**, by Aminabhavi, T.M.\*, Cassidy, P.E.\*, and Thompson, C.M., *Rubber Chemistry and Technology* **63**:451-469, 1990.

**Environmental Signal Processing: Three-Dimensional Matched-Field Processing with a Vertical Array**, by Perkins, J.S. and Kuperman, W.A., *Journal of the Acoustical Society of America* **87**:1553-1556, 1990.

**Erratum: "Spherical-Wave Scattering by a Finite-Thickness Solid Plate, with Some Implications for Panel Measurements" [J. Acoust. Soc. Am. **83**, 1284-1290 (1988)]**, by Piquette, J.C., *Journal of the Acoustical Society of America* **84**:1939, 1990.

**Experimental Investigation of the Wave Propagation on a Point-Driven, Submerged Capped Cylinder Using K-Space Analysis**, by Williams, E.G., Houston, B.H., and Bucaro, J.A., *Journal of the Acoustical Society of America* **87**:513-522, 1990.

**The Hydroacoustic Behavior of Piezoelectric Composite Materials**, by Ting, R.Y., *Ferroelectrics* **102**:215-224, *Proceedings of Indo-United States Workshop on Electronic Ceramics and Materials*, 1990.

**Hydrophone Figure of Merit**, by Bhalla, A.S.\* and Ting, R.Y., *Sensors and Materials* **4**:181-185, 1990.

**Inter-Element Coupling in Arrays of Large-Area Hydrophones**, by Ting, R.Y. and Geil, F.G.\*, **9, Pt. Z**:153-158, *Proceedings of the Institute of Acoustics: Sonar Transducers Past, Present and Future*, Institute of Acoustics, 1987.

**The Kirchhoff Approximation for Acoustic Scattering from a Rough Fluid-Elastic Solid Interface**, by Dacol, D.K., *Journal of the Acoustical Society of America* **88**:978-983, 1990.

**Line and Plane Arrays of Resonant Monopole Scatterers**, by Tolstoy, I.\* and Tolstoy, A., *Journal of the Acoustical Society of America* **87**:1038-1043, 1990.

**Low Frequency Acoustic Tomography Using Matched Field Processing**, by Tolstoy, A. and Diachok, O., *Oceans '90, Conference Proceedings. Engineering in the Ocean Environment*, IEEE, 1990, pp. 30-34.

**A Low-Frequency, Tow-Powered Sound Source**, by Blue, J.E. and Semper, P.A.\*, *Second International Workshop on Power Transducers for Sonics and Ultrasonics*, Toulon Var Technologies, 1990, pp. 1-20.

**Manifestly Reciprocal Scattering Amplitudes for Rough Interface Scattering**, by Berman, D.H. and Dacol, D.K., *Journal of the Acoustical Society of America* **87**:2024-2032, 1990.

**Measurement Plan for TRANSECT89. The 1989 Transients Extraction and Classification Test**, by Dicus, R., *First Acoustic Transient Workshop*, Naval Research Laboratory, 1989, pp. 525-530.

**Modal Shading Coefficients for High Resolution Source Depth Localization**, by Yang, T.C., *Journal of the Acoustical Society of America* **87**:668-672, 1990.

**Nearfield Acoustic Holography for an Axisymmetric Geometry: A New Formulation**, by Sarkissian, A., *Journal of the Acoustical Society of America* **88**:961-966, 1990.

**New Acoustical Materials for Broadband Damping Applications**, by Ting, R.Y., *Undersea Defense Technology Conference*, 1990, pp. 699-703.

**A New Integral Equation Formulation for an Axisymmetric Structure**, by Sarkissian, A., *Journal of the Acoustical Society of America* **88**:2007-2014, 1990.

**Offnormal Incidence Reflection-Coefficient Determination for Thick Underwater Acoustic Panels using a Generalized ONION Method**, by Piquette, J.C., *Journal of the Acoustical Society of America* **87**:1416-1427, 1990.

**Optimal Time-Domain Beamforming with Simulated Annealing Including Application of a Priori Information**, by Kuperman, W.A., Collins, M.D., Perkins, J.S., and Davis, N.R., *Journal of the Acoustical Society of America* **88**:1802-1810, 1990.

**A Planar Array for the Generation of Evanescent Waves**, by Trivett, D.H., Luker, L.D., Petrie, S., Van Buren, A.L., and Blue, J.E., *Journal of the Acoustical Society of America* **87**:2535-2540, 1990.

**Polybutyleneoxyglycols as Acoustical Windows**, by Besuden, T.W.\* and Thompson, C.M., *ACS Division of Polymeric Materials: Science and Engineering Fall Meeting*, American Chemical Society, 1990, pp. 584-587.

**A Poynting Vector Formulation for Thin Shells and Plates, and Its Application to Structural Intensity Analysis and Source Localization Part I: Theory**, by Romano, A.J.\*, Abraham, P.B., and Williams, E.G., *Journal of the Acoustical Society of America* **87**:1166-1175, 1990.

**The Propagation of Axisymmetric Waves on a Fluid-Loaded Cylindrical Shell**, by Photiadis, D.M., *Journal of the Acoustical Society of America* **88**:239-250, 1990.

**Range/Frequency Limits on Deconvolution for Transient Source Extraction**, by Dicus, R., *First Acoustic Transient Workshop*, Naval Research Laboratory, 1989, pp. 399-426.

**A Real Time Control Strategy for Bayesian Belief Networks with Application to Ship Classification Problem Solving**, by Musman, S.A., Chang, L.W., and Booker, L.B., *International Conference on Tools for Artificial Intelligence*, IEEE, NY, 1990, pp. 738-744.

**The Relationship of Singular Value Decomposition to Wave-Vector Filtering in Sound Radiation Problems**, by Photiadis, D.M., *Journal of the Acoustical Society of America* **88**:1152-1159, 1990.

**The Rotated Parabolic Equation and Sloping Ocean Bottoms**, by Collins, M.D., *Journal of the Acoustical Society of America* **87**:1035-1037, 1990.

**Self Refraction in Dusted Nonlinear Waves**, by McDonald, B.E. and Plante, D.R.\*, *Frontiers of Nonlinear Acoustics: Proceedings of the 12th International Symposium on Nonlinear Acoustics*, Elsevier Science Publishers, NY, 1990, pp. 339-344.

**The Shock Test Facility on Explosive-Driven, Water-Filled Conical Shock Tube**, by Zalesak, J.F. and Poche, L.B., *60th Shock and Vibration Symposium*, U.S. Navy, 1990, pp. 73-76.

**Shot Localization Using a Broadband Normal-Mode Pulse Model**, by Mignerey, P.C., *Oceans '90, Conference Proceedings. Engineering in the Ocean Environment*, IEEE, NY, 1990, pp. 121-124.

**Single Ping ADCP Data**, by Trump, C.L., *Proceedings of the IEEE Fourth Working Conference on Current Measurement*, 1990, pp. 215-224.

**Sound Propagation through the Gulf Stream: Current Status of Two Three-Dimensional Models**, by Perkins, J.S., Williamson, M., Kuperman, W.A., and Evans, R.B.\*, 1:203-215, *Computational Acoustics*, Elsevier Science, 1990.

---

An \* identifies an author listed with an affiliation other than NRL.

**Statistics of Mixing Patches Observed in the Sargasso Sea**, by Rosenblum, L.J. and Marmorino, G.O., *Journal of Geophysical Research* **95**:5349-5357, 1990.

**Time-Frequency Analysis of Acoustic Scattering from Elastic Objects**, by Yen, N.C., Dragonette, L.R., and Numrich, S.K., *Journal of the Acoustical Society of America* **87**:2359-2370, 1990.

**Transducer Needs for Low-Frequency Sonar**, by Timme, R.W., Young, A.M., and Blue, J.E., *Second International Workshop on Power Transducers for Sonics and Ultrasonics*, 1990, pp. 1-2.

**Ultrasonic Measurements in the CeCu<sub>6</sub> Kondo Compound**, by Lin, S.W.\*, Ran, Q.Z.\*, Adenwalla, S.\*, Zhao, Z.\*, Edelstein, A., Das, B.N., Ketterson, J.B.\*, Sarma, B.K.\*, and Levy, M.\*, *1990 IEEE Ultrasonics Symposium*, IEEE, NY, 1990, pp. 1313-1316.

**Ultrasonic Texture and Stress Measurements in Anisotropic Polycrystalline Aggregates**, by Delsanto, P.P.\*, Mignogna, R.B., and Clark, A.V.\*, *Journal of the Acoustical Society of America* **87**:215-224, 1990.

**Underwater Helmholtz Resonator Transducers for Low-Frequency, High Power Applications**, by Young, A.M. and Henriquez, T.A., **9**:52-57, *Proceedings of the Institute of Acoustics: Sonar Transducers Past, Present and Future*, Institute of Acoustics, 1987.

**Use of the Connection Machine to Study Ultrasonic Wave Propagation in Materials**, by Delsanto, P.P.\*, Whitcombe, T.V., Chaskelis, H.H., and Mignogna, R.B., *Elastic Waves and Ultrasonic Nondestructive Evaluation*, 1990, pp. 409-410.

**Using the Connection Machine for Transient Back-Propagation**, by Mignerey, P., *First Acoustic Transient Workshop*, Naval Research Laboratory, 1989, pp. 433-450.

## Artificial Intelligence

**FIS: An AI-Based Fault Isolation System**, by DeJong, K., Pipitone, F., and Spears, W., *Southeastcon '90 Proceedings*, IEEE, NY, 1990, pp. 770-774.

**Improving Tactical Plans with Genetic Algorithms**, by Schultz, A.C. and Grefenstette, J.J., *International Conference on Tools for Artificial Intelligence*, IEEE, NY, 1990, pp. 328-334.

**A Parallel Implementation of a Belief Maintenance System**, by Ramsey, C.L. and Booker, L.B., *5th Annual AI Systems in Government*, IEEE, NY, 1990, pp. 180-186.

**Study of Interval-Valued Belief Combination with Conflicting Evidence**, by Chang, L.W. and Kashyap, R.L.\*, *International Conference on Tools for Artificial Intelligence*, IEEE, NY, 1990, pp. 725-730.

**Using Genetic Algorithms for Supervised Concept Learning**, by Spears, W.M. and DeJong, K.A.\*, *International Conference on Tools for Artificial Intelligence*, IEEE, NY, 1990, pp. 335-341.

**Validation of the Technicians Assister System**, by Molnar, J.A. and Sarteschi, C.F.\*, *IEEE Conference on Managing Expert System Programs and Projects*, IEEE, NY, 1990, pp. 201-204.

## Atmospheric Sciences

**Aerosol Size Distributions and Optical Properties Found in the Marine Boundary Layer over the Atlantic Ocean**, by Hoppel, W.A., Fitzgerald, J.W., Frick, G.M., Larson, R.E., and Mack, E.J.\*, *Journal of Geophysical Research* **95**:3659-3686, 1990.

**Channel Probe Observations of the Auroral Ionosphere During High-Power Auroral Stimulation Heating Experiments**, by Wagner, L.S., Goldstein, J.A., Lind, R.W.\*, Wong, A.Y.\*, and McCarrick, M.J.\*, *Radio Science* **25**:1407-1422, 1990.



**Computer Simulations of Plasma Structure, Dynamics, and Turbulence in the High Latitude Ionosphere with Magnetospheric Coupling**, by Keskinen, M.J., Huba, J.D., Zalesak, S.T., Fedder, J.A., Mitchell, H.G.\*, and Satyanarayana, P.\*, *Ionospheric Effects Symposium*, Naval Research Laboratory, 1990, pp. 108-117.

**Differential Memory in the Trilinear Model Magnetotail**, by Chen, J., Mitchell, H.G.\*, and Palmadesso, P.J., *Journal of Geophysical Research* **95**:15141-15146, 1990.

**The Effect of the Ionosphere on Radiowave Signals and System Performance**, edited by Goodman, J.M., Klobuchar, J.A.\*, Joiner, R.G.\*, and Loicher, H.\*, *Ionospheric Effects Symposium*, Naval Research Laboratory, 1990, pp. 1-570.

**Equilibrium Structure of the Plasma Sheet Boundary Layer-Lobe Interface**, by Hugo, R., Ganguli, G., Palmadesso, P., and Dusenbery, P.B.\*, *Geophysical Research Letters* **17**:2313-2316, 1990 Fall AGU Meeting, 1990.

**Ionospheric Modification by Chemical Releases and High Power Radio Waves**, by Bernhardt, P.A., Scales, W.A., Keskinen, M.J., Rowland, H.L., and Duncan, L.M.\*, *Ionospheric Effects Symposium*, Naval Research Laboratory, 1990, pp. 24-38.

**A Model Study of the Response of Mesospheric Ozone to Short-Term Solar Ultraviolet Flux Variations**, by Summers, M.E., Strobel, D.F.\*, Bevilacqua, R.M., Zhu, X.\*, Deland, M.T.\*, Allen, M.\*, and Keating, G.M.\*, *Journal of Geophysical Research* **95**:22523-22538, 1990.

**Multiple Electron Species Dynamics Parallel to a High-Latitude Field Line**, by Mitchell, H.G.\*, Ganguli, S.B.\*, and Palmadesso, P.J., *Geophysical Research Letters* **17**:1873-1876, 1990.

**Nonlinear Evolution of High-Latitude Ionospheric Interchange Instabilities with Scale-Size-Dependent Magnetospheric Coupling**, by Keskinen, M.J. and Huba, J.D., *Journal of Geophysical Research* **95**:15157-15166, 7th IEEE Pulsed Power Conference, 1990.

**A Numerical Study of the Coastal Cyclogenesis in GALE IOP 2: Sensitivity to PBL Parameterizations**, by Holt, T.\*, Chang, S., and Raman, S.\*, *Monthly Weather Review* **118**:234-257, 1990.

**Oblique-Incidence Sounder Measurements with Absolute Propagation Delay Timing**, by Daehler, M., *Ionospheric Effects Symposium*, Naval Research Laboratory, 1990, pp. 418-426.

**Plasma Instabilities in the High Latitude E-Region Induced by High Power Radio Waves**, by Chaturvedi, P.K. and Ossakow, S.L., *Journal of Geophysical Research* **95**:15185-15193.

**The Scattering Rate of Solar 834Å Radiation by Magnetospheric O<sup>+</sup> and O<sup>++</sup>**, by Meier, R.R., *Geophysical Research Letters* **17**:1613-1616, 1990.

**The Seasonal Variation of Water Vapor and Ozone in the Upper Mesosphere: Implications for Vertical Transport and Ozone Photochemistry**, by Bevilacqua, R.M., Strobel, D.F.\*, Summers, M.E., Olivero, J.J.\*, and Allen, M.\*, *Journal of Geophysical Research* **95**:883-893, 1990.

**Submicron Aerosol Size Distributions Measured over the Tropical and South Pacific**, by Hoppel, W.A. and Frick, G.M., *Atmospheric Environment* **24A**:645-659, 1990.

**Three Dimensional Simulation Study of Ionospheric Plasma Clouds**, by Zalesak, S.T., Drake, J.F.\*, and Huba, J.D., *Geophysical Research Letters* **17**:1597-1600, 1990.

**Theoretical Scaling Laws for the Spectrum of Density Irregularities**, by Keskinen, M.J., *Ionospheric Effects Symposium*, Naval Research Laboratory, 1990, pp. 133-141.

**Upgrades for Efficient 3D Ionospheric Ray Tracing - Investigation of HF NVIS Effects**, by Reilly, M.H., *Ionospheric Effects Symposium*, Naval Research Laboratory, 1990, pp. 290-299.

## Biosciences

**Biological Responses to Liposome Encapsulated Hemoglobin (LEH) are Improved by a PAF Antagonist**, by Rabinovici, R.\*, Rudolph, A.S., Yu, T.L., and Feuerstein, G.\*, *Circulatory Shock* 31:431-445, 1990.

**A Continuous Flow Immunoassay for Rapid and Sensitive Detection of Small Molecules**, by Kusterbeck, A.W., Wemhoff, G.A., Charles, P.T.\*, Yaeger, D.A., Bredehorst, R.\*, Vogel, C.W.\*, and Ligler, F.S., *Journal of Immunological Methods* 135:191-197, 1990.

**Design and Application of Lipid Microstructures**, by Gaber, B.P., *Naval Research Reviews* 42:1:2-10, 1990.

**Dry-Storage of Liposome-Encapsulated Hemoglobin: A Blood Substitute**, by Rudolph, A.S. and Cliff, R.O.\*, *Cryobiology* 27:585-590, 1990.

**An Efficient Synthesis of Phosphatidylcholines**, by Singh, A., *Journal of Lipid Research* 31:1522-1525, 1990.

**Improved Biological Properties of Synthetic Distearoyl Phosphatidyl Choline-Based Liposome in the Conscious Rat**, by Rabinovici, R.\*, Rudolph, A.S., and Feuerstein, G.\*, *Circulatory Shock* 30:207-219, 1990.

**Insertion of Bacteriorhodopsin into Polymerized Diacetylenic Phosphatidylcholine Bilayers**, by Ahl, P.L., Price, R., Smuda, J., Gaber, B.P., and Singh, A., *Biochimica et Biophysica Acta* 1028:141-153, 1990.

**Liposome-Encapsulated Hemoglobin: An Oxygen-Carrying Fluid**, by Rabinovici, R.\*, Randolph, A.S., Ligler, F.S., Yu, T.L., and Feuerstein, G., *Circulatory Shock* 32:1-17, 1990.

**Microstructure, Order and Fluidity of 1, 2-bis (tricoso-10,12-diynoyl)-sn-glycero-3-phosphocholine (DC8, 9PC) a Polymerizable Lipid**, by ESR and NMR, by Treanor, R. and Pace, M.D., *Biochimica et Biophysica Acta* 1046:1-11, 1990.

**Molecular Modelling of Saccharide-Lipid Interactions**, by Rudolph, B.R.\*, Chandrasekhar, I.\*, Gaber, B.P., and Nagumo, M., *Chemistry and Physics of Lipids* 53:243-261, 1990.

**NRL-3D: A Sequence-Structure Database Derived from the Protein Data Bank (PDB) and Searchable within the PIR Environment**, by Pattabiraman, N., Nambodiri, K.\*, Lowrey, A., and Gaber, B.P., *Protein Sequence and Data Analysis* 3:387-405, 1990.

**Stabilization of Lipid Microstructures: Fundamentals and Applications**, by Rudolph, A.S., Singh, A., Price, R.R., Goins, B., and Gaber, B.P., Plenum Press, NY, 1990, pp. 103-115.

## Ceramics, Glasses, and Plastics

**Development of a Structurally Rigid, Acoustically Transparent Plastic**, by Thompson, C.M., *Journal of the Acoustical Society of America* 87:1138-1143, 1990.

**Effects of Microstructural Heterogeneities on Piezoelectric Behavior in PZT Ceramics**, by Lloyd, I.K., Kahn, M., and Lang, S.\*, *Ceramic Transactions* 8:390-398, 1990.

**Fluoride Glass Fibers with Improved Mechanical Strength**, by Pureza, P.C., Brower, D.T.\*, and Aggarwal, I.D., *Journal of the American Ceramic Society* 72:1980-1981, 1989.

**Fracture Toughness of Graded Metal-Particulate/Brittle-Matrix Composites**, by Jessen, T.L. and Lewis, D., *Journal of the American Ceramic Society* 73:1405-1408, 1990.

**Modified Specimen Preparation for Applied-Moment Double-Cantilever Beam Testing**, by Jessen, T.L. and Lewis, D., *Journal of the American Ceramic Society* **72**:2196-2197, 1989.

**On the Determination of the Piezoelectric Shear Coefficient,  $d_{15}$ , in a PZT Ceramic**, by Kahn, M., Ingel, R.P., and Lewis, D., *Ferroelectrics* **102**:225-234, 1990.

**Particulate Toughening in the  $MgAl_2O_4$ - $TiO_2$  System**, by Homeny, J.\*, Lewis, D., Rice, R.W.\*, and Garino, T.\*, *Fracture Mechanics of Ceramics, Vol. 7. Composites, Impact, Statistics and High-Temperature Phenomena*, Plenum Press, 1986, pp. 117-126.

**Piezoelectric and Dielectric Properties of Calcium and Samarium Modified Lead Titanate Ceramics for Hydroacoustic Applications**, by Rittenmyer, K.M. and Ting, R.Y., *Ferroelectrics* **110**:171-182, 1990.

**Precipitation and Toughness in Alumina-Rich Spinel Single Crystals**, by Lewis, D., Bender, B.A., Rice, R.W.\*, Homeny, J.\*, and Garino, T.\*, *Fracture Mechanics of Ceramics, Volume 8. Microstructure Methods, Design, and Fatigue*, Plenum Press, 1986, pp. 61-67.

**Research in Ceramic Composites at NRL**, by Lewis, D., *Naval Research Reviews* **42**:1:18-27, 1990.

**Strength and Toughness Measurements of Ceramic Fiber Composites**, by Wu, C.C., Lewis, D., and McKinney, K.R., *Fracture Mechanics of Ceramics, Vol. 7. Composites, Impact, Statistics and High-Temperature Phenomena*, Plenum Press, 1986, pp. 53-60.

## Chemistry

**Ab Initio Multireference Configuration Interaction Study of  $CH_2NNO_2 \cdot HONO$  Elimination vs NN Bond Fragmentation**, by Mowery, R.C., Page, M., Adams, G.F.\*, and Lengsfeld, B.H.\*, *Journal of Chemical Physics* **93**:1857-1864, 1990.

**Approaches to the Accurate Characterization of High Purity Metal Fluoride and Fluoride Glasses**, by Beary, E.S.\*, Paulsen, P.J.\*, Rains, T.C.\*, Ewing, K.J., Jaganathan, J., and Aggarwal, I.D., *Journal of Crystal Growth* **106**:51-60, *3rd Workshop on Purification of Materials for Crystal Growth and Glass Processing*, 1990.

**Band Structure and Optical Absorption Properties of Polysilane Chains**, by Mintmire, J.W., *Advances in Chemistry Series* **224**:543-550, *Silicon-Based Polymer Science: A Comprehensive Resource*, American Chemical Society, 1990.

**BH Reaction Kinetics Studied with a High-Temperature Reactor**, by Garland, N.L., Stanton, C.T., Fleming, J.W., Baronavski, A.P., and Nelson, H.H., *Journal of Physical Chemistry* **94**:4952-4956, 1990.

**Bulk Modulus of Partially Fluorinated Epoxies**, by Thompson, C.M. and Leimer, L.M., *Polymer Preprints* **31**:366-37, *Fluorinated Polymers Symposium of the American Chemical Society Conference*, 1990.

**A Cell for X-Ray Absorption Studies of the Emerged Electrochemical Interphase**, by Hansen, G.J. and O'Grady, W.E., *Review of Scientific Instruments* **61**:2127-2132, 1990.

**Chemical Interactions in the Aluminum-Carbon and Aluminum-Silicon Carbide Systems**, by Maruyama, B., Ohuchi, F.S.\*, and Rabenberg, L.\*, *MRS Symposium Proceedings* **170**:167-172, *Interfaces in Composites*, 1990.

**Controlled Shrinkage Polymers: Characterization of Epoxy Resins Cured With Spirobis lactones**, by Sikes, A.M. and Brady, R.F., *Journal of Polymer Science: Part A Polymer Chemistry* **28**:2533-2536, 1990.

**Damping in Polydienes**, by Roland, C.M. and Trask, C.A.\*, *ACS Symposium Series* **424**:301-313, *Sound and Vibration Damping with Polymers*, American Chemical Society, 1990.

An \* identifies an author listed with an affiliation other than NRL.

**Detonation Transmission in Layered Explosives**, by Jones, D.A.\*, Sichel, M.\*, Oran, E.S., and Guirguis, R.\*, *23rd International Symposium on Combustion*, The Combustion Institute, 1990, pp. 1805-1811.

**Dynamic Mechanical Behavior of Filled Rubber at Small Strains**, by Roland, C.M., *Journal of Rheology* **34**:25-34, 1990.

**The Effect of Annealing on the Thermal and Dynamic Mechanical Properties of TMXDI Based Polyurethanes**, by Stack, G.M., *Eighteenth North American Thermal Analysis Society Conference*, North American Thermal Analysis Society, 1989, pp. 802-808.

**Effect of Gravity on the Stability and Structure of Lean Hydrogen-Air Flames**, by Patnaik, G.\* and Kailasanath, K., *23rd International Symposium on Combustion*, The Combustion Institute, 1990, pp. 1641-1647.

**Effect of Hydrogen Substitution on the Mass Spectrometry and Size-Exclusion Chromatography of Perfluorinated Polyether Fluids as Determined by Time-of-Flight Secondary Ion Mass Spectrometry**, by Hues, S.M., Wyatt, J.R., Colton, R.J., and Black, B.H.\*, *Analytical Chemistry* **62**:1074-1079, 1990.

**Effective Coupling of Pulsed Power to Chemically Reactive Metallic Systems**, by Lee, W.M.\* and Ford, R.D., *IEEE Pulsed Power Conference*, IEEE, 1989, pp. 981-984.

**Effective Temperature and Relaxation in Complex Systems**, by Rajagopal, A.K., Ngai, K.L., and Teitler, S., *Journal of Chemical Physics* **92**:243-246, 1990.

**Effects of Heat Release and Gravity on an Unsteady Diffusion Flame**, by Ellzey, J.L.\* and Oran, E.S., *23rd International Symposium on Combustion*, The Combustion Institute, 1990, pp. 1635-1640.

**Efficient Photogeneration of Triplets in Shock Compressed 2, 4-Dinitrostilbene**, by Justus, B.L., Merritt, C.D., and Campillo, A.J., *Shock Compression of Condensed Matter*, North Holland, NY, 1990, pp. 871-874.

**An Electrical Characterization of Dipalmitoylphosphatidylethanolamine and Cadmium Stearate Films on Platinum Surfaces in Aqueous Solutions**, by Fare, T.L., *Langmuir* **6**:1172-1179, 1990.

**Electrochemical Studies of Quinone Oxygen**, by Deanhardt, M.L.\*, Mushrush, G.W., Stalick, W.M.\*, and Watkins, J.M., *Fuel Science and Technology International* **8**:135-147, 1990.

**Empirical Potential for Hydrocarbons for Use in Simulating the Chemical Vapor Deposition of Diamond Films**, by Brenner, D.W., *Physical Review B* **42**:9458-9471, 1990.

**Energy Partitioning in the 266 nm Dissociation of  $\text{HN}_3$  and Relative Transition Probabilities in the  $\text{NH} (c^1\Pi \leftrightarrow a^1\Delta)$  System**, by Nelson, H.H. and McDonald, J.R., *Journal of Chemical Physics* **93**:8777-8783, 1990.

**Evidence for a Sequential Mechanism in the Production of BH from the 193 nm Photodissociation of  $\text{BH}_3\text{CO}$** , by Rice, J.K., Douglass, C.H.\*, and Nelson, H.H., *Chemical Physics* **143**:109-121, 1990.

**The Fate of Selected Impurities in the Recrystallization of Zirconium Oxychloride and in its Conversion to Zirconium Tetrafluoride**, by Sommers, J.A.\*, Fahey, J.V.\*, Ewing, K.J., and Aggarwal, I.D., *Journal of Materials Research* **5**:392-396, 1990.

**Features of the Potential Energy Surface for Reactions of OH with  $\text{CH}_2\text{O}$** , by Soto, M.R. and Page, M., *Journal of Physical Chemistry* **94**:3242-3246, 1990.

**Fire Inhibiting Behavior of High Molecular Weight Polyisobutylene in JP-5 Jet Fuel**, by Little, R., Pande, S.\*, and Romans, J.\*, *Fire Safety Journal* **16**:119-136, 1990.

**Following Steepest Descent Reaction Paths. The Use of Higher Energy Derivatives with Ab Initio Electronic Structure Methods**, by Page, M., Doubleday, C.\*, and McIver, J.W.\*, *Journal of Chemical Physics* **93**:5634-5642, 1990.

**Gas-Phase Reactions of Tantalum Carbide Cluster Ions with Deuterium and Small Hydrocarbons**, by Cassady, C.J. and McElvany, S.W., *Journal of the American Chemical Society* **112**:4788-4797, 1990.

**Gel Permeation Chromatographic Analysis of Polyurethane Prepolymer Synthesis Kinetics. I. The Effect of Catalyst**, by Thompson, C.M., Taylor, S.G.\*, and McGee, W.W.\*, *Journal of Polymer Science: Part A: Polymer Chemistry* **28**:333-334, 1990.

**Ground States and Ionization Energies of Polysilane Oligomers**, by Ortiz, J.V.\* and Mintmire, J.W., *Advances in Chemistry Series* **224**:551-561, *Silicon-Based Polymer Science: A Comprehensive Resource*, American Chemical Society, 1990.

**Heat-Capacity Study of Tricritical Behavior at the Smectic-A-Chiral-Smectic-C Liquid-Crystal Transition**, by Boerio-Goates, J.\*, Garland, E.W.\*, and Shashidhar, R., *Physical Review A* **41**:3192-3196, 1990.

**Henry Anton Resing (1933-1988)**, by Garroway, A.N., *Colloids and Surfaces* **45**:IX-XII, 1990.

**Improved Resolution of Multiple-Pulse Proton Images by Oversampling**, by Cory, D.G., Garroway, A.N., and Miller, J.B., *Journal of Magnetic Resonance* **87**:202-207, 1990.

**Incorporation of Ion Channels in Polymerized Membranes and Fabrication of a Biosensor**, by Fare, T.L., Singh, A., Seib, K.D., Smuda, J.W., Ahl, P.L., Ligler, F.S., and Schnur, J.M., *Molecular Electronics*, 1989, pp. 305-315.

**Incorporation of Reactive Dynamics in Simulations of Chemically-Sustained Shock Waves**, by Brenner, D.W., Elert, M.L.\*, and White, C.T., *Shock Compression of Condensed Matter*, North Holland, NY, 1990, pp. 263-266.

**Influences Exerted by Metal Deactivator on the Thermal Stability of Aviation Fuel in the Presence of Copper**, by Morris, R.E. and Turner, N.H., *Fuel Science and Technology* **8**:327-350, 1990.

**Infrared Reflection Absorption Spectroscopy Study of the Chemisorption of Small Molecules ( $H_2O_2$  and  $H_2O$ ) on Silicon**, by McGonigal, M., Bermudez, V.M., and Butler, J.E., *Journal of Electron Spectroscopy and Related Phenomena* **54/55**:1033-1044, 1990.

**Initiation and Growth of Pits on Aluminum Alloys and Silicon Carbide/Aluminum Metal Matrix Composites**, by McCafferty, E., Trzaskoma, P.P., and Natishan, P.M., *Advances in Localized Corrosion*, NACE, 1990, pp. 181-190.

**Insoluble Sediment Formation in Middle Distillate Diesel Fuel: The Role of Soluble Macromolecular Oxidatively Reactive Species**, by Hardy, D.R. and Wechter, M.A.\*, *Energy and Fuels* **4**:270-274, 1990.

**Interactive Effects of 2,5-Dimethylpyrrole, 3-Methylindole and Tert-Butyl Hydroperoxide in a Shale-Derived Diesel Fuel**, by Mushrush, G.W., Beal, E.J., Hazlett, R.N., and Hardy, D.R., *Energy and Fuels* **4**:15-19, 1990.

**Interaggregate Interaction in Filled Rubber**, by Roland, C.M. and Lee, G.F.\*, *Rubber Chemistry and Technology* **63**:554-566, *Rubber Division National Meeting*, 1990.

**Interpenetrating Polymer Networks**, by Fox, R.B., Fay, J.J.\*, Sorathia, U.\*, and Sperling, L.H.\*, *Sound and Vibration Damping with Polymers*, American Chemical Society, 1990, pp. 359-365.

**An Inverse Problem in Propellant Combustion**, by Ladouceur, H.D., *Inverse Methods in Action. Proceedings of the Multicentennials Meeting on Inverse Problems.*, Springer-Verlag, NY, 1990, pp. 347-355.

---

An \* identifies an author listed with an affiliation other than NRL.

**JFTOT Model Studies: Oxidation of Selected Model Organosulfur Compounds in Dodecane**, by Morris, R.E. and Mushrush, G.W., *Fuel Science and Technology* **8**:527-544, 1990.

**Laser Probing of Nascent Gaseous Product Species Formed in Chemical Reactions on Surfaces**, by Hsu, D.S.Y., *Optical Engineering* **29**:1494-1503, 1990.

**Laser-Induced Fluorescence Study of Methoxy Radical Formation from the Reactions of F(<sup>2</sup>p) Atoms with CH<sub>3</sub>OH, CD<sub>3</sub>OH and CH<sub>3</sub>OD**, by Bogan, D.J., Kaufman, M.\*, Hand, C.W.\*, Sanders, W.A.\*, and Brauer, B.E.\*, *Journal of Physical Chemistry* **94**:8128-8134, 1990.

**Limits of Chemical Effects on Cold Fusion**, by White, C.T., Dunlap, B.I., Brenner, D.W., Mowrey, R.C., and Mintmire, J.W., *Journal of Fusion Energy* **9**:363-366, 1990.

**Liquid Phase Co-Oxidation of Thiophenol and Styrene by Oxygen and t-Butyl Hydroperoxide**, by Mushrush, G.W., Watkins, J.M.\*, Hazlett, R.N.\*, Hardy, D.R., and Black, B.H.\*, *Fuel Science and Technology International* **8**:753-767, 1990.

**Measurement of Translational Displacement Probabilities by NMR: An Indicator of Compartmentation**, by Cory, D.G. and Garroway, A.N., *Magnetic Resonance in Medicine* **14**:435-444, 1990.

**Methyl Radical Formation from Filament Pyrolysis of Acetylene and Acetylene/Hydrogen Mixtures within Quartz Tubes**, by Villa, E., Dagata, J.A., Horwitz, J., Squire, D.\*, and Lin, M.C.\*, *Journal of Vacuum Science and Technology* **A8**:3237-3240, 1990.

**Miscible Elastomer Mixtures**, by Roland, C.M. and Trask, C.A.\*, *Rubber Chemistry and Technology* **62**:896-907, 1989.

**Monomolecular Film Behavior of Tetraether Lipids from a Thermoacidophilic Archaeobacteria at the Air/Water Interface**, by Dote, J.L.\*, Barger, W.R., Behroozi, F.\*, Chang, E.L., Lo, S.L.\*, Montague, C.E.\*, and Nagumo, M., *Langmuir* **6**:1017-1023, 1990.

**Network Recovery from Uniaxial Extension. I. Elastic Equilibrium**, by Roland, C.M., *Rubber Chemistry and Technology* **62**:863-879, 1989.

**Network Recovery from Uniaxial Extension. II. The Origin of the Mullins Effect**, by Roland, C.M., *Rubber Chemistry and Technology* **62**:880-895, 1989.

**New Fluorination Reactions of Ammonium Bifluoride**, by Sanghera, J.S.\*, Hart, P.\*, Sachon, M.G.\*, Ewing, K.J., and Aggarwal, I.D., *Journal of the American Ceramic Society* **73**:1339-1346, 1990.

**Non-Statistical Behavior in the Rotational Energy Distribution of CO from the Hot Hydrogen Atom Reaction: H+CO<sub>2</sub>OH+CO**, by Rice, J.K., Chung, Y.C., and Baronavski, A.P., *Chemical Physics Letters* **167**:151-154, 1990.

**Nuclear Magnetic Resonance Study of Polyisoprene/Poly (vinylethylene) Miscible Blends**, by Miller, J.B., McGrath, K.J., Roland, C.M., Trask, C.A.\*, and Garroway, A.N., *Macromolecules* **23**:4543-4547, 1990.

**OH and CH Profiles in a 10 Torr Methane/Oxygen Flame: Experiment and Flame Modeling**, by Fleming, J.W., Burton, K.A., and Ladouceur, H.D., *Chemical Physics Letters* **175**:395-400, 1990.

**On the Exotherm of Polyacrylonitrile. I. Pyrolysis of the Homopolymer Under Inert Conditions**, by Peebles, L.H.\*, Peyser, P., Snow, A.W., and Peters, W.C.\*, *Carbon* **28**:707-715, 1990.

**Optical Detection in Diamond Chemical Vapor Deposition**, by Celii, F.G., Pehrsson, P.E., and Butler, J.E., *SPIE Proceedings* **1146**:119-123, *Diamond Optics II*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Orientation Effects in Rubber Double Networks**, by Roland, C.M. and Warzel, M.L.\*, *Rubber Chemistry and Technology* **63**:285-297, 1990.

**Oxide Acid-Base Reactions in Ceramic Corrosion**, by Jones, R.L., *High Temperature Science* **27**:369-380, 1990.

**Peptide Conformations in Crystals**, by Karle, I.L. and Balaram, P.\*, *Protein Folding - Deciphering the Second Half of the Genetic Code*, 1990, pp. 75-84.

**Photochemistry of Adsorbed Phenyl Iodide: Desorption and Photofragmentation Dynamics**, by Villa, E., Dagata, J.A.\*, and Lin, M.C.\*, *Journal of Chemical Physics* **92**:1407-1412, 1990.

**Photodissociation Dynamics of  $\text{BH}_3\text{CO}$  at 193 nm**, by Weiner, B.R., Pasternack, L., Nelson, H.H., Prather, K.A.\*, and Rosenfeld, R.N.\*, *Journal of Physical Chemistry* **94**:4138-4142, 1990.

**Photodissociation of Adsorbed Tri-methylindium**, by Horwitz, J.S., Villa, E., and Hsu, D.S.Y., *Journal of Physical Chemistry* **94**:7214-7219, 1990.

**The Physical and Chemical Action of Fire Suppressants**, by Sheinson, R.S., Penner-Hahn, J.E.\*, and Indritz, D.\*, *Fire Safety Journal* **15**:437-450, 1990.

**Pit Morphology of Aluminum Alloy and Silicon Carbide/Aluminum Alloy Metal Matrix Composites**, by Trzaskoma, P.P., *Corrosion* **46**:402-409, 1990.

**Principal Component Analysis with Integral Auger Electron Spectroscopy Spectra**, by Turner, N.H., Wandass, J.H., and Hutson, F.L.\*, *Journal of Vacuum Science and Technology* **8**:4033-4038, 1990.

**Production and Fragmentation of Tantalum Carbide Cluster Ions**, by McElvany, S.W. and Cassady, C.J., *Journal of Physical Chemistry* **94**:2057-2062, 1990.

**Pulsed Field Gradient NMR Imaging of Solids**, by Miller, J.B., Cory, D.G., and Garraway, A.N., *Chemical Physics Letters* **164**:1-4, 1989.

**Reactions of First-Row Transition Metal Atoms and Small Clusters in Matrices**, by Hauge, R.H.\*, Margrove, J.L.\*, and Kafafi, Z.H., *Chemistry and Physics of Matrix-Isolated Species*, Elsevier Science Publishers, 1989, pp. 277-302.

**Reactions of Small Carbon Clusters with Water in Cryogenic Matrices. The FTIR Spectrum of Hydroxyethynylcarbene**, by Ortman, B.J.\*, Hauge, R.H.\*, Margrave, J.L.\*, and Kafafi, Z.H., *Journal of Physical Chemistry* **94**:7973-7977, 1990.

**Reactions of the Carbene Ions  $\text{CnN}^+$  with Labelled Methane: Mechanistic Interpretation**, by Parent, D.C., *Journal of the American Chemical Society* **112**:5966-5973, 1990.

**Rearrangement of Langmuir-Blodgett Stearic Acid Films and Band Assignments in Deuterated Stearic Acid Monolayers**, by Mowery, R.L. and Dote, J.L., *Mikrochimica Acta* **II**:69-73, 6th Annual International Conference on Fourier Transform Spectroscopy, Vienna, Austria, 1988.

**Role of Selective Sorption in Chemiresistor Sensors for Organophosphorous Detection**, by Grate, J.W., Klusty, M., Barger, W.R., and Snow, A.W., *Analytical Chemistry* **62**:1927-1934, 1990.

**The Rotational and Tunneling Spectrum of the  $\text{H}_2\text{S CCO}_2$  Van Der Waals Complex**, by Rice, J., Coudert, L.H.\*, Matsumura, K.\*, Suenram, R.D.\*, Lovas, F.J.\*, Stahl, W.\*, Pauley, D.J.\*, and Kukolich, S.G.\*, *Journal of Chemical Physics* **92**:6408-6419, 1990.

**Rotational Energy Accommodation and Apparent Desorption Energy of OH Formed in the Catalytic Reaction of  $\text{NO}_2$  and  $\text{H}_2$  Over Pt (111): Effect of Surface Oxygen Coverage**, by Novakoski, L.V. and Hsu, D.S.Y., *Journal of Chemical Physics* **92**:1999-2003, 1990.

**Some One-Dimensional Molecular-Dynamics Simulations of Detonation**, by Elert, M.L.\*, Brenner, D.W., and White, C.T., *Shock Compression of Condensed Matter*, North Holland, NY, 1990, pp. 275-278.

**Studies of Chromium Carbide Electrodeposition in Molten Fluorides**, by Stern, K.H. and Rolison, D.R., *Journal of the Electrochemical Society* **137**:178-183, 1990.

**Surface Analysis: X-Ray Photoelectron and Auger Electron Spectroscopy**, by Turner, N.H., *Analytical Chemistry Fundamental Reviews* **62**:113R-125R, 1990.

**Temperature Dependence of the Collisional Quenching of NH ( $a^1\Delta$ ) N<sub>2</sub>, O<sub>2</sub>, CO and Xe**, by Nelson, H.H., McDonald, J.R., and Alexander, M.H.\*, *Journal of Physical Chemistry* **94**:3291-3294, 1990.

**Tetrahalodimolybdate (II) Complexes with Alkyl Substituted Pyridines, A Structural and Spectroscopic Study**, by Ewing, K.J., Shupack, S.I.\*, and Rheingold, A.L.\*, *Polyhedron* **9**:1209-1215, 1990.

**Theoretical and Experimental Investigation of the Reaction BH+D<sub>2</sub> → BHD<sub>2</sub>**, by Caldwell, N.J., Rice, J.K., Nelson, H.H., Adams, G.F.\*, and Page, M., *Journal of Chemical Physics* **93**:479-488, 1990.

**Vibrational Selectivity in the Single Photon Infrared Photochemistry of Matrix-Isolated 2-Fluoroethanol**, by Shirk, J. and Marquardt, C., *Journal of Chemical Physics* **92**:7234-7240, 1990.

**X-Ray Studies Near the A<sub>u</sub>-A<sub>2</sub> Critical Points in a Binary System of Successive Homologues**, by Quentel, S.\*, Heppke, G.\*, Prasad, S.K.\*, Pfeiffer, S.\*, and Shashidhar, R., *Molecular Crystals and Liquid Crystals* **7**:85-90, 1990.

**Zeolite-Modified Electrodes and Electrode Modified Zeolites**, by Rolison, D.R., *Chemical Reviews* **90**:867-878, 1990.

## Communications

**Channel-Access Control for Integrated Voice/Data Networks**, by Wieselthier, J.E. and Ephremides, A.\*, 2:921-924, *IEEE Conference on Decision and Control*, IEEE, NY, 1990.

**Distributed Multimedia Control in Secure Communication Systems**, by Kallgren, D.G., 2:724-728, 1990 *MILCOM, IEEE Military Communications Conference*, IEEE, NY, 1990.

**Extending the Brewer-Nash Model to a Multilevel Context**, by Meadows, C.A., *IEEE Computer Society Symposium on Research in Security and Privacy*, IEEE, NY, 1990, pp. 95-102.

**Packet-Error Probability Analysis for Unslotted FH-CDMA Systems with Error-Control Coding**, by Tarr, T.A.B., Wieselthier, J.E., and Ephremides, A.\*, *IEEE Transactions on Communications* **38**:1987-1993, 1990.

**Performance of FH/BFSK with Generalized Fading in Worst-Case Partial Band Interference; Conference Paper: A Connection between Rayleigh Fading and Worst-Case Partial Band Interference**, by Crepeau, P.J., *IEEE Journal on Selected Areas in Communication* **8**:884-886, *IEEE MILCOM '89*, 1990.

**The Use of Multiple Protocols in Multi-Hop Radio Networks**, by Thoet, W.\*, Ephremides, A.\*, and Baker, D.J., *IEEE International Conference on Communications*, IEEE, 1990, pp. 301.3.1-301.3.6.

## Computer Sciences

**An Ada Binding for Massively Parallel Systems**, by Park, E.K.\*, Anderson, P.B.\*, and Hardy, H.D., *International Computer Software and Applications Conference*, IEEE, NY, 1990, pp. 430-435.

**Are Trusted Computer System Standards Useful for the Development of Systems Whose Criticality is Other than Security?**, by Lubbes, H.O., panel chair, *COMPASS '90, Systems Integrity, Software Safety and Process Security*, 1990, pp. 182-184.



**Constructing Containers Using a Multilevel Relational Data Model**, by Meadows, C., *Database Security III: Status and Prospects*, Elsevier, 1990, pp. 127-141.

**Encoding Geometric Invariances In High-Order Neural Networks**, by Giles, C.L.\*, Griffin, R.D., and Maxwell, T.\*, *Neural Information Processing Systems*, 1988, pp. 301-309.

**Formal Semantics for Logics of Cryptographic Protocols**, by Syverson, P., *The Computer Security Foundations Workshop III*, IEEE, NY, 1990, pp. 32-41.

**Hairy Neuron Convergence Theorems Without the Precision of Timing**, by Szu, H.H., 3:469-476, *International Joint Conference on Neural Networks IJCNN*, IEEE, NY, 1990.

**Informal Top-Level Specifications for Trusted Application Systems**, by McDermott, J.P., Froscher, J.N., Payne, C.N., and Lubbes, H.O., *Sixth Annual Computer Security Applications Conference*, IEEE, 1990, pp. 423-433.

**Information Sharing in Secure Systems**, by Gray, J.W., *The Computer Security Foundations Workshop III*, IEEE, NY, 1990, pp. 128-138.

**Neural Networks for Computing Invariant Clustering of a Large Open Set of DNAPCR-Primers Generated by a Fracture Knowledge Based System**, by Benachenhou, D.\*, Cader, M.\*, Szu, H., Medsker, L.\*, Wittwert, C.\*, and Garling, D.\*, 2:83-89, *International Joint Conference on Neural Networks IJCNN*, IEEE, NY, 1990.

**On Models for a Trusted Application System**, by Payne, C.N., Froscher, J.N., and McDermott, J.P., *Sixth Annual Computer Security Applications Conference*, IEEE, NY, 1990, pp. 58-67.

**Optical Neuro-Computing**, by Szu, H.H., *Handbook of Neural Computing Applications*, Academic Press, 1990, pp. 271-293.

**Probabilistic Interference**, by Gray, J.W., *IEEE Computer Society Symposium on Research in Security and Privacy*, IEEE, NY, 1990, pp. 170-179.

**Processing Poisson Series In Parallel**, by Deprit, A.\* and Deprit, E., *Journal of Symbolic Computation* 10:179-201, 1990.

**Quotient States and Probabilistic Channels**, by Moskowitz, I.S., *Computer Security Foundations Workshop III*, IEEE, NY, 1990, pp. 74-83.

**Random Address 32x32 Programmable Analog Vector-Matrix Multiplier for Artificial Neural Networks**, by Moon, K.K., Kub, F.J., and Mack, I.A.\*, *Custom Integrated Circuits Conference*, IEEE, NY, 1990, pp. 26.7.1-26.7.4.

**Representing Partial Knowledge in an Algebraic Security Model**, by Meadows, C., *The Computer Security Foundations Workshop III*, IEEE, NY, 1990, pp. 23-31.

**Security Models and Information Flow**, by McLean, J., *IEEE Computer Society Symposium on Research in Security and Privacy*, IEEE, NY, 1990, pp. 180-187.

**A Software Engineering Methodology for Rule-Based Systems**, by Jacob, R.J.K. and Froscher, J.N., *IEEE Transactions on Knowledge and Data Engineering* 2:173-189, 1990.

**The Specification and Modeling of Computer Security**, by McLean, J., *Computer* 23:9-16, 1990.

**Specification and Verified Decomposition of System Requirements Using CSP**, by Moore, A.P., *IEEE Transactions on Software Engineering* 16:932-948, 1990.

**Successful Acquisition of Certifiable Application Systems (or: How not to Shake Hands with the Tar Baby)**, by Froscher, J.N., McDermott, J.P., Payne, C.N., and Lubbes, H.O., *Sixth Annual Computer Security Applications Conference*, 1990, pp. 414-422.

**Timing Analysis of the Monotonic Logical Grid for Many-Body Dynamics**, by Picone, J.M., Lambrakos, S.G., and Boris, J.P., *SIAM Journal on Scientific and Statistical Computing* 11:368-388, 1990.

**Using CSP to Develop Trustworthy Hardware**, by Moore, A.P., *COMPASS '90. Systems Integrity, Software Safety and Process Security*, 1990, pp. 126-134.

## Electronics and Electricity

**Analysis of Dark Current in IR Detectors on Thinned P-Type HgCdTe**, by Omaggio, J.P., *IEEE Transactions on Electron Devices* 37:141-152, 1990.

**Asymmetric Coupled Transmission Lines with Anisotropic Coupling**, by Weaver, P.\* and Pond, J.M., 2:669-672, *IEEE MTT-S International Microwave Symposium*, IEEE, NY, 1990.

**Band-Gap Determination by Photo-reflectance of InGaAs and InAlAs Lattice Matched to InP**, by Gaskill, D.K., Bottka, N., Aina, L.\*, and Mattingly, M.\*, *Applied Physics Letters* 56:1269-1271, 1990.

**Characterization of Microstructured Field Emission Cathodes**, by Ting, A.C., Kirkpatrick, D.A.\*, Stockton, W.B., McCarthy, D.M., Ayers, J.D., Schoen, P.E., Gold, S.H., Peckerar, M.C., and Sprangle, P.A., *Third International Vacuum Microelectronics Conference Proceedings*, 1990, pp. P.14.

**Common-Mode Rejectors for Pulse Power Diagnostics**, by Mathew, J., *Review of Scientific Instruments* 61:1926-1930, 1990.

**A Compact Flange-Mounted Electron Beam Source**, by Jonker, B.T., *Journal of Vacuum Science and Technology* A8:3883-3886, 1990.

**Comparison Between Incoherent and Coherent Measurements**, by Li, M.C., *IEEE 1990 International Symposium on Electromagnetic Compatibility*, 1990, pp. 323-328.

**Complex Resonances of Conducting Spheres with Lossy Coatings**, by Taylor, D.J., Jordan, A.K., Moser, P.J.\*, and Uberall, H.\*, *IEEE Transactions on Antennas and Propagation* 38:236-240, 1990.

**Deposition of MgO/Au Cermet Films by Triode Sputtering and their Characterization**, by Ritz, V.H., *Surface and Interface Analysis* 15:173-179, 1990.

**Design Principles for a Sheet-Beam Electron Gun for a Quasi-Optical Gyrotron**, by Manheimer, W.M., Fliflet, A.W., and Lee, R.\*, *IEEE Transactions on Electron Devices* 37:840-849, 1990.

**Determination of Interface Trap Capture Cross Sections Using Three-Level Charge Pumping**, by Saks, N.S. and Ancona, M.G., *IEEE Electron Device Letters* 11:339-341, 1990.

**Efficient Generation of Multi-Gigawatt RF Power by a Klystronlike Amplifier**, by Friedman, M., Krall, J., Lau, Y.Y., and Serlin, V., *Review of Scientific Instruments* 61:171-181, 1990.

**Electronic "Neural" Net Algorithm for Maximum Entropy Solutions to Ill-Posed Problems - Part II. Multiply Connected Electronic Circuit Implementation**, by Marrian, C.R.K., Mack, I.A., Banks, C., and Peckerar, M.C., *IEEE Transactions on Circuits and Systems* 37:110-113, 1990.

**The Emission Gated Device Experiment**, by Kodis, M.A., Vanderplaats, N.R., and Zaidman, E.G., *IEEE Electron Devices Meeting*, IEEE, NY, 1990, pp. 35.6.1-35.6.4.

**Evidence for Anomalous Structural Relaxation in SiO<sub>2</sub> Films**, by Rendell, R.W. and Ngai, K.L., *Applied Physics Letters* 57:2428-2430, 1990.

**Experimental Study of a Ka-Band Gyrotron Backward Wave Oscillator**, by Park, S.Y.\*, Kyser, R.H.\*, Armstrong, C.M., Parker, R.K., and Granatstein, V.L.\*, *IEEE Transactions on Plasma Science* 18:321-325, 1990.

**Field and Energy-Density Profiles in Layered Superconductor-Dielectric Structures**, by Pond, J.M. and Weaver, P.\*, 1:277-280, *IEEE-MTT-S International Microwave Symposium Digest*, IEEE, NY, 1990.

**Gain Broadening in an Inhomogeneous Gyrotron Traveling Wave Amplifier**, by Park, G.S.\*, Park, S.Y.\*, Kyser, R.H.\*, Ganguly, A.K., and Armstrong, C.M., *IEEE International Electron Devices Meetings*, IEEE, NY, 1990, pp. 29.2.1-29.2.3.

**Heavy Ion Total Fluence Effects in GaAs Devices**, by Anderson, W.T., Knudson, A.R., Meulenbergh, A.\*, Hung, H.L.\*, and Roussos, J.A., *IEEE Transactions on Nuclear Science* 37:2065-2070, 1990 *Nuclear and Space Radiation Effects Conference*, 1990.

**The HF Skywave Channel: Measured Scattering Functions for Midlatitude and Auroral Channels and Estimates for Short-Term Wideband HF Rake Modem Performance**, by Wagner, L.S., Goldstein, J.A., Meyers, W.D., and Bello, P.A.\*, 1989 *IEEE Military Communications Conference*, IEEE, NY, 1989, pp. 48.2.1-48.2.10.

**Integrated Electrical/Thermal Component Modeling**, by Baker, W.E. and Shortt, D.J., 2:78-83, *Proceedings of the 25th Intersociety Energy Conversion Engineering Conference*, American Institute of Chemical Engineers, NY, 1990.

**Ionospheric Effects on Modern Electronic Systems**, by Goodman, J.M. and Aarons, J.\*, *Proceedings of the IEEE* 78:512-527, 1990.

**Ku- and K-Band GaAs MMIC Varactor-Tuned FET Oscillators Using MEV Ion-Implanted Buried-Layer Back Contacts**, by McNally, P.J.\*, Smith, T.\*, Phelleps, F.R.\*, Hogan, K.\*, Smith, B.\*, and Dietrich, H., 1:189-192, *IEEE MTT-S International Microwave Symposium Digest*, IEEE, NY, 1990.

**Ku- and K-Band GaAs MMIC Varactor-Tuned FET Oscillators Using MEV Ion-Implanted Buried-Layer Back Contacts**, by McNally, P.J.\*, Smith, T.\*, Phelleps, F.R.\*, Hogan, K.M.\*, and Smith, B.\*, *IEEE Monolithic Circuits Symposium*, IEEE, NY, 1990, pp. 107-110.

**Laser Processed Silicides for GaAs HEMTs**, by Anderson, W.T., Christou, A., Thompson, P.E., Davis, J.L., Gossett, C.R., Eridon, J.M., Michelakis, C.\*, Kiriakidis, G.\*, Hatzopoulos, Z.\*, Ethimiopoulos, T.\*, Kudumas, M.\*, and Morgan, D.V.\*, *MRS Symposium Proceedings* 158:261-266, *In-Situ Patterning: Selective Area Deposition and Etching*, 1990.

**Lattice-Gas Approach to Semiconductor Device Simulation**, by Ancona, M.G., *Solid-State Electronics* 33:1633-1642, 1990.

**Measurement of Harmonic Distortion in Microwave Photodetectors**, by Esman, R.D. and Williams, K.J., *IEEE Photonics Technology Letters* 2:502-504, 1990.

**Megavolt, Multikiloamp Ka Band Gyrotron Oscillator Experiment**, by Black, W.M.\*, Gold, S.H., Fliflet, A.W., Kirkpatrick, D.A.\*, Manheimer, W.M., Lee, R.C.\*, Granatstein, V.L.\*, Hardesty, D.L., Kinkead, A.K., and Sucy, M.\*, *Physics of Fluids B* 2:193-198, 1990.

**Metal Contact Degradation on III-V Compound Semiconductors**, by Kiriakidis, G.\*, Anderson, W.T., Hatzopoulos, Z.\*, Michelakis, C.\*, and Morgan, D.V.\*, *NATO ASI Series E Applied Sciences* 175:269-289, *Semiconductor Device Reliability*, Kluwer Academic, Boston, 1990.

**Modified-Lead-Titanate/Polymer Composites for Hydrophone Applications**, by Shanlov, A.A.\*, Smith, W.A.\*, and Ting, R.Y., *Ferroelectrics* 93:177-182, 1990.

**Molecular Electronic Devices, Today's Dream - Tomorrow's Reality**, by Carter, F.L., *British '84 USA*, Online Publications, Pinner, UK, 1984, pp. 127-138.

**Multilayer Feedforward Neural Networks II: Optimizing Learning Methods**, by Szu, H.H., *Handbook of Neural Computing Applications*, Academic Press, 1990, pp. 107-124.

**The Numerical Simulation of Particle Trajectories in Quantum Transport and the Effects of Scattering and Self-Consistency on the Performance of Quantum Well Devices**, by Jensen, K.L. and Buot, F.A., *IEEE International Electron Devices Meeting*, IEEE, NY, 1990, pp. 31.4.1-31.4.4.

**Observation of  $H^+$  Motion During Interface Trap Formation**, by Saks, N.S. and Brown, D.B., *IEEE Transactions on Nuclear Science* **37**:1624-1631, 1990.

**Operation of a Triggered Vacuum Flashover Switch on PAWN**, by Kellogg, J.C., Boller, J.R., Commisso, R.J., Ford, R.D., and Jenkins, D.J., *IEEE Pulsed Power Conference*, IEEE, 1989, pp. 710-712.

**Optimized Molecular Beam Epitaxy Structures for GaAs in Silicon Photodetectors**, by Christou, A., Papanicolaou, N.A., and Anderson, G.W., *MRS Symposium Proceedings* **158**:371-376, *In-Situ Patterning: Selective Area Deposition and Etching*, Materials Research Society, Pittsburgh, PA, 1990.

**PAWN, an Inductive Storage Pulsed Power Generator for High Power Applications**, by Commisso, R.J., Boller, J.R., Cooperstein, G., Ford, R.D., Hinshelwood, D.D.\*, Jenkins, D.J., Kellogg, J.C., Lupton, W.H.\*, Shipman, J.D.\*, and Weber, B.V., *7th IEEE Pulsed Power Conference*, IEEE, 1989, pp. 272-274.

**Photodetector Arrays and Architectures for Acousto-Optical Signal Processing**, by Anderson, G.W., Kub, F.J., and Borsuk, G.M., *Optical Engineering* **29**:58-67, 1990.

**The Photoluminescent Spectrum of Neutron Irradiated GaAs**, by Carlone, C.\*, Bernier, G.\*, Tannous, E.\*, Khanna, S.M.\*, Anderson, W.T., and Gardes, J.W.\*, *IEEE Transactions on Nuclear Science* **37**:1718-1725, *1990 Nuclear and Space Radiation Effects Conference*, 1990.

**Post-Irradiation Behavior of the Interactive State Density and the Trapped Position Charge**, by Stahlbush, R.E., Mrstik, B.J., and Lawrence, R.K.\*, *IEEE Transactions on Nuclear Science* **37**:1641-1649, 1990.

**Programmable Analog Vector-Matrix Multipliers**, by Kub, F.J., Moon, K.K., Mack, I.A., and Long, F.M.\*, *IEEE Journal of Solid-State Circuits* **25**:207-214, 1990.

**Propagation and Circuit Characteristics of Inductively Coupled Superconducting Microstrip**, by Pond, J.M., Weaver, P.F.\*, and Kaufman, I.\*, *IEEE Transactions on Microwave Theory and Techniques* **38**:1635-1643, 1990.

**Radiation Hardened SOS MOSFET Technology for Infrared Focal Plane Readouts**, by Kub, F.J., Yao, C.T.\*, and Waterman, J.R., *IEEE Transactions on Nuclear Science* **37**:2020-2025, *Nuclear and Space Radiation Conference*, 1990.

**A Repetitive Switching Array for Laboratory Electromagnetic Launcher Research**, by Ford, R.D., Jenkins, D.J., Lupton, W.H.\*, Klug, R.B.\*, Jensen, D.B.\*, and Scanlon, J.\*, *IEEE Pulsed Power Conference*, IEEE, 1989, pp. 156-159.

**Review of Two-Stream Amplifier Performance**, by Phillips, P.M.\*, Zaidman, E.G., Freund, H.P.\*, Ganguly, A.K., and Vanderplaats, N.R., *IEEE Transactions on Electron Devices* **37**:870-877, 1990.

**RF Amplifiers Based on Vacuum Microelectronic Technology**, by Parker, R.K. and Adams, R.H., *IEEE Electron Devices Meeting*, IEEE, NY, 1990, pp. 7.1.1-7.1.4.

**Saturation of Radiation-Induced Threshold-Voltage Shifts in Thin-Oxide MOSFETs at 80K**, by Klein, R.B.\*, Saks, N.S., and Shanfield, Z.\*, *IEEE Transactions on Nuclear Science* **37**:1690-1695, 1990.

**Scaling of an 85 GHz Gyrotron to Operate at 94 GHz**, by Bergeron, G.\*, Czarnaski, M.\*, and Rhinewine, M., *International Journal of Electronics* **69**:281-290, 1990.

**Some Observations on the Electrical Characterization of the Heteroepitaxially Grown Cubic SiC**, by Molnar, B. and Kelner, G., 162:481-488, *Diamond, Boron Nitride, Silicon Carbide and Related Wide Bandgap Semiconductors*, Materials Research Society, 1990.

**Spatial Uniformity of Interface Trap Distribution in MOSFET's**, by Saks, N.S. and Ancona, M.G., *IEEE Transactions on Electron Devices* 37:1057-1063, 1990.

**Status of Compound Semiconductor Device Reliability**, by Anderson, W.T. and Christou, A., *NATO ASI Series E Applied Sciences* 175:423-437, *Semiconductor Device Reliability*, Kluwer Academic, Boston, 1990.

**Systematic Anomalies in Experiment Data from LIPS III**, by Severns, J. G., Conway, R.W.\*, Stern, T.G.\*, and Hobbs, R.M.\*, 2:1208-1212, *Twenty First IEEE Photovoltaic Specialists Conference - 1990*, IEEE, NY, 1990.

**Thermionic Sources for High-Brightness Electron Beams**, by Thomas, R.E., Gibson, J.W., Haas, G.A.\*, and Abrams, R.H., *IEEE Transactions on Electron Devices* 37:850-861, 1990.

**Vacuum-Chamber Testing of Space Exposed SPEAR-I HV Components**, by Antoniadis, J.\*, Alport, M.\*, Boyd, D.\*, and Ellis, R.\*, *IEEE Transactions on Electrical Insulation* 25:563-567, 1990.

**A Variational Mesh for Quantum-Mechanical Simulations**, by Pederson, M.R. and Jackson, K.A., *Physical Review B* 41:7453-7461, 1990.

**A Wideband mm-Wave Monolithic Receiver**, by Lan, G.L.\*, Chen, J.C.\*, Pao, C.K.\*, Herman, M.I.\*, Sokilich, M.\*, and Neidert, R.E., *Micro-wave Journal* 33:2:93-111, 1990.

**X-Ray Studies of Heat Treated SiGe/Si Strained-Layer Superlattices**, by Prokes S.M., Fatemi, M., and Wang, K.L.\*, *Journal of Vacuum Science and Technology B* 8:254-257, 1990.

## Fluid Mechanics

**Evolution of the Orszag-Tang Vortex System in a Compressible Medium. I. Initial Average Subsonic Flow**, by Dahlburg, R.B. and Picone, J.M., *Physics of Fluids* 1:2153-2171, 1989.

**Maximum Dissipation States and Vortical Flow in MHD**, by Montgomery, D.\*, Dahlberg, J.P., Phillips, L.\*, and Theobald, M.L.\*, *Topological Fluid Mechanics*, Cambridge University Press, NY, 1990, pp. 196-205.

**Numerical Evaluation of the Complete Wave-Resistance Green's Function Using Bessho's Approach**, by Wang, H.T. and Rogers, J.C.W.\*, *Fifth International Conference on Numerical Ship Hydrodynamics*, National Academy Press, Washington, D.C., 1990, pp. 133-144.

## Geosciences

**"Turbulent Mixing" in a Salt Finger Staircase**, by Marmorino, G.O., *Journal of Geophysical Research* 95:12983-12994, 1990.

**Airborne Gravity Measurement Over Sea-ice: The Western Weddell Sea**, by Brozena, J., LaBrecque, J.\*, Peters, M., Bell, R.\*, and Raymond, C.\*, *Geophysical Research Letters* 17:1941-1944, 1990.

**Continental Margins of the Western Weddell Sea: Insights from Airborne Gravity and Geosat-Derived Gravity**, by Bell, R.E.\*, Brozena, J.M., Haxby, W.F.\*, and LaBrecque, J.L.\*, 50:91-101, *Contributions to Antarctic Research I*, American Geophysical Union, 1990.

**Evidence of Bragg Scattering in Microwave Doppler Spectra of Sea Return**, by Plant, W.J.\* and Keller, W.C., *Journal of Geophysical Research* **95**:16299-16310, 1990.

**Introduction (Special Issue on the Defense Meteorological Satellite Program (DMSP))**, by Hollinger, J.P., *IEEE Transactions on Geoscience and Remote Sensing* **28**:779-780, 1990.

**Measurement of Sea Spikes in Microwave Backscatter at Moderate Incidence**, by Jessup, A.T.\*, Keller, W.C., and Melville, W.K., *Journal of Geophysical Research* **95**:9679-9688, 1990.

**Morphology and Plate Tectonics: The Modern Polar Oceans**, by Johnson, G.L., *Geological History of the Polar Oceans: Arctic versus Antarctic*, 1990, pp. 11-28.

**Polar Twilight UV-Visible Radiation Field: Perturbations Due to Multiple Scattering, Ozone Depletion, Stratospheric Clouds, and Surface Albedo**, by Anderson, D.E. and Lloyd, S.A.\*, *Journal of Geophysical Research* **95**:7429-7434, 1990.

**Prospecting for Active Volcanism: A Promising Role for Long-Range Aircraft Along the Mid-Oceanic Ridge**, by Vogt, P.R., Nishimura, C., and Jarvis, J.L., *EOS* **71**:773-774, 1990.

**Residual Depth Anomalies and the Origin of the Australian-Antarctic Discordance Zone**, by Marks, K.M.\*, Vogt, P.R., and Hall, S.A.\*, *Journal of Geophysical Research* **95**:17325-17337, *American Geophysical Union Meeting*, 1990.

## Information

**Speckle Reduction in Polarimetric SAR Imagery**, by Lee, J.S., Grunes, M.R., and Mango, S.A., *IGARSS '90* **3**:2431-2434, *Remote Sensing Science for the Nineties*, IEEE, NY, 1990.

**Texture Segmentation of SAR Images Using Localized Spatial Filtering**, by Du, L.J., *IGARSS '90* **3**:1983-1986, *Remote Sensing Science for the Nineties*, IEEE, NY, 1990.

## Instrumentation

**A Compact Fiber-Optic Magnetometer Employing an Amorphous Metal Wire Transducer**, by Koo, K.P.\*, Bucholtz, F., Dagenais, D.M.\*, and Dandridge, A., *IEEE Photonics Technology Letters* **1**:464-466, 1989.

**Component Selection for Fiber-Optic Fluorometry**, by Thompson, R.B., Levine, M.\*, and Kondracki, L.\*, *Applied Spectroscopy* **44**:117-122, 1990.

**DANTE Slice Selection for Solid-State NMR Imaging**, by Cory, D.G.\*, Miller, J.B., and Garraway, A.N., *Journal of Magnetic Resonance* **90**:544-550, 1990.

**Final Design and Cold Tests of a Harmonic Ubitron Amplifier**, by Bluem, H.\*, Jackson, R.H., Pershing, D.E.\*, Booske, J.H.\*, and Granatstein, V.L.\*, *Eleventh International Free Electron Laser Conference*, IEEE, NY, 1990, pp. 37-40.

**NMR Imaging of Solids with a Spatially Selective Receiver Coil**, by Cory, D.G.\*, Miller, J.B., and Garraway, A.N., *Measurement Science and Technology* **1**:1338-1342, 1990.

**On-Demand Atmospheric Pressure Storage System of AsH<sub>3</sub> and PH<sub>3</sub>**, by Sillmon, R.S. and Freitas, J.A.\*, *Applied Physics Letters* **56**:174-176, 1990.

**Parameter Compatibility Relations for Accelerated Testing**, by Rajagopal, A.K. and Teitler, S., *IEEE Transactions on Reliability* **39**:110-113, 1990.

**A Tunneling-Tip Magnetometer**, by Brizzolara, R.A., Colton, R.J., Wun-Fogle, M.\*, and Savage, H.T.\*, *Sensors and Actuators* **20**:199-205, 1989.

**Vibrating Orifice Droplet Generator for Precision Optical Studies**, by Lin, H.B., Eversole, J.D.\*, and Campillo, A.J., *Review of Scientific Instruments* **61**:1018-1023, 1990.

## Laser Science

**2  $\mu\text{m}$ -Pumped AgGaSe<sub>2</sub> Optical Parametric Oscillator with Continuous Tuning Between 2.49 and 12.05  $\mu\text{m}$** , by Quarles, G.J., Marquardt, C.L., and Esterowitz, L., *IEEE Lasers and Electro-Optics Society Annual Meeting*, IEEE, NY, 1990, pp. 128-129.

**3 Micron Laser Performance of Ho:YAlO<sub>3</sub> and Nd, Ho:YAlO<sub>3</sub>**, by Bowman, S.R., Rabinovich, W.S., Bowman, A.P.\*, Feldman, B.J., and Rosenblatt, G.H., *IEEE Journal of Quantum Electronics* **26**:403-406, 1990.

**Blue Light Generation by Nonlinear Mixing of Nd:YAG and GaAlAs Laser Emission in KNbO<sub>3</sub> Resonant Cavity**, by Goldberg, L., Chun, M.K., Duling, I.N., and Carruthers, T.F., *Applied Physics Letters* **56**:2071-2073, 1990.

**Cavity Eigenmodes for a Free Electron Laser**, by Riyopoulos, S.\* and Tang, C.M., *Journal of Applied Physics* **67**:1669-1675, 1990.

**Characteristics of the High-Pressure Ar/Xe Laser Pumped by an Electron Beam and an Electron-Beam Sustained Discharge**, by Suda, A.\*, Wexler, B.L., Riley, K.J.\*, and Feldman, B.J., *IEEE Journal of Quantum Electronics* **26**:911-921, 1990.

**Collective Effects in the Free Electron Laser**, by Sprangle, P., Tang, C.M., and Roberson, C.W.\*, *Laser Handbook*, **6**:263-289, North-Holland, NY, 1990.

**Comparison of Coolants for Achieving Short-Wavelength Recombination**, by Thornhill, J.W., Apruzese, J.P., Giuliani, J.L., and Roelant, D.\*, *Journal of Applied Physics* **68**:33-40, 1990.

**Diode-Pumped Holmium, Thulium, and Erbium Lasers Between 2 and 3  $\mu\text{m}$  Operating CW at Room Temperature**, by Esterowitz, L., *Optical Engineering* **29**:676-680, 1990.

**Effect of Tapering on Optical Guiding and Sideband Growth in a Finite-Pulse Free Electron Laser**, by Hafizi, B.\*, Ting, A., Sprangle, P., and Tang, C.T., *Eleventh International Free Electron Laser Conference*, IEEE, NY, 1990, pp. 442-447.

**Effects of Helium Addition to Ar/Xe Mixtures in High-Pressure Atomic-Transition Xenon Lasers**, by Suda, A.\*, Wexler, B.L., Riley, K.J.\*, and Feldman, B.J., *IEEE Journal of Quantum Electronics* **26**:1304-1308, 1990.

**The Effects of Wiggler Errors on Free-Electron-Laser Performance**, by Esarey, E., Marable, W.\*, and Tang, C.T., *Nuclear Instruments and Methods in Physics Research A* **296**:423-428, *Eleventh International Free Electron Laser Conference*, IEEE, NY, 1990.

**The Effects of Wiggler Errors on Free-Electron-Laser Performance**, by Esarey, E., Marable, W.\*, and Tang, C.M., *Eleventh International Free Electron Laser Conference*, IEEE, NY, 1990, pp. 423-428.

**Efficiency Enhancement and Optical Guiding in a Tapered High-Power Finite-Pulse Free Electron Laser**, by Hafizi, B.\*, Ting, A., Sprangle, P., and Tang, C.M., *Physical Review Letters* **B4**:180-183, 1990.

**Efficient Second Harmonic Conversion of Broad-Band, High-Peak-Power Nd: Glass Laser Radiation Using Large-Aperture KDP Crystals in Quadrature**, by Pronko, M., Lehmberg, R., Obenschain, S., Pawley, C., Manka, C.K., and Eckardt, R.\*, *IEEE Journal of Quantum Electronics* **26**:337-347, 1990.

**Electron Beam Propagation Through a Magnetic Wiggler with Random Field Errors**, by Esarey, E., Tang, C.M., and Marable, W.\*, *Journal of Applied Physics* **67**:2210-2222, 1990.

---

An \* identifies an author listed with an affiliation other than NRL.

**Excited State Absorption Effects in  $\text{Tm}^{3+}$  - Activated 2  $\mu\text{m}$  Laser Crystals**, by Rosenblatt, G.\*, Quarles, G.J., Marquardt, C.L., and Esterowitz, L., *IEEE Lasers and Electro-Optics Society Annual Meeting*, IEEE, NY, 1990, pp. 517-518.

**Experimental Measurements of Modal Transients and Theoretical Thermal Modeling of Laser Diodes**, by Lippincott, W., Clement, A.E., and Collins, W.C., *SPIE Proceedings 1219*:401-416, *Laser-Diode Technology and Applications II*, Society of Photo-optical and Instrumentation Engineers, Bellingham, WA, 1990.

**Flash-pumped, Room Temperature 2  $\mu\text{m}$  Laser with 5% Slope Efficiency**, by Quarles, G.J., Rosenbaum, A.\*, Marquardt, C.L., and Esterowitz, L., *SPIE Proceedings 1223*:221-230, *Solid State Lasers*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Frequency-Offset, Solid-State Laser Coherent Doppler Velocity Measurements of High-Speed Targets**, by Huston, A.L. and Roe, M.G., *Optics Letters* 15:570-572, 1990.

**Fundamental-Mode Amplifier Performance of the Ubitron**, by Pershing, D.E.\*, Jackson, R.H., Bluem, H.\*, and Freund, H.P.\*, *Eleventh International Free Electron Laser Conference*, IEEE, NY, 1990, pp. 199-204.

**Gas Lasers**, by Lehecka, T.\*, Luhmann, N.C.\*, Peebles, W.A.\*, Goldhar, J.\*, and Obenschain, S.P., *Handbook of Microwave and Optical Components, Volume 3. Optical Components*, John Wiley & Sons, NY, 1990, pp. 451-596.

**High Efficiency, High Energy Performance of an X-Ray Preionized Ar/Xe Laser**, by Tucker, J.E. and Wexler, B.L., *IEEE Journal of Quantum Electronics* 26:1647-1652, 1990.

**High Resolution Ablation of Amorphous Polymers Using  $\text{CO}_2$  Laser Irradiation**, by Sonnenschein, M.F. and Roland, C.M., *Applied Physics Letters* 57:425-427, 1990.

**High-Power Free-Electron Lasers Driven by RF Linear Accelerators**, by Godlove, T.F.\* and Sprangle, P., *Particle Accelerators* 34:169-187, 1990.

**Illumination Uniformity of Spherical Targets using Kilojoule-Scale Lasers with Optical Smoothing**, by Colombant, D.G. and Schmitt, A.J., *Journal of Applied Physics* 67:2303-2309, 1990.

**The Impact of Field-Error Reduction Techniques on FEL Performance**, by Marable, W.P.\*, Esarey, E., and Tang, C.M., *Eleventh International Free Electron Laser Conference*, IEEE, NY, 1990, pp. 499-507.

**The NIST-NRL Free-Electron Laser Facility**, by Johnson, R.G.\*, Ayers, R.L.\*, Broberg, J.B.\*, Cutler, R.I.\*, Debenham, P.H.\*, Johnson, B.C.\*, Lindstrom, E.R.\*, Mohr, D.L.\*, Rose, J.E.\*, Whittaker, J.K.\*, Wilkin, N.D.\*, Wilson, M.A.\*, Penner, S.\*, Tang, C.T., and Sprangle, P., *SPIE Proceedings 1227*:14-25, *Free-Electron Lasers and Applications*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**The NIST-NRL Free-Electron-Laser Facility**, by Johnson, R.G.\*, Ayers, R.L.\*, Broberg, J.B.\*, Cutler, R.I.\*, Debenham, P.H.\*, Johnson, B.C.\*, Lindstrom, E.R.\*, Mohr, D.L.\*, Rose, J.E.\*, Whittaker, J.K.\*, Wilkin, N.D.\*, Wilson, M.A.\*, Penner, S., Tang, C.M., and Sprangle, P., *Eleventh International Free Electron Laser Conference*, IEEE, NY, 1990, pp. 25-32.

**A Novel Coupling Technique for End Pumping Solid-State Lasers Using One Centimeter, Linear-Aperture High-Power Laser Diode Bars**, by Lynn, J.G.\*, Stoneman, R.C., and Esterowitz, L., *IEEE Lasers and Electro-Optics Society Annual Meeting*, IEEE, NY, 1990, pp. 118-119.

**Passive Laser Mode Locking with an Anti-resonant Nonlinear Mirror**, by Carruthers, T.F. and Duling, I.N., *Optics Letters* 15:804-806, 1990.

**Production of Laser Radiation in Aligned Crystal Targets**, by Fusina, R., *Journal of the Optical Society of America B* 7:2076-2078, 1990.



**Pulsed-Power Driven X-Ray Lasers: Fantasy or Reality?**, by Apruzese, J.P. and Davis, J., *International Conference on Lasers '89*, 1990, pp. 7-12.

**Pumping Reactions in a Photoinitiated XeF<sub>2</sub>-D<sub>2</sub> Chemical Laser**, by Searles, S.K. and Winings, M.J.\*, *Journal of Chemical Physics* 93:4713-4718, 1990.

**Recent Advances in KCl:Li (F<sub>2</sub><sup>+</sup>)<sub>A</sub> Color-Center Lasers**, by Afzal, R.S. and Schneider, I., *IEEE Lasers and Electro-Optics Society Annual Meeting*, IEEE, 1990, pp. 132-133.

**Recent Developments in Blue Generation Using Laser Diodes**, by Chun, M.K. and Goldberg, L., *IEEE Lasers and Electro-Optics Society Annual Meeting*, IEEE, 1990, pp. 142-145.

**Recent Progress in Interferometric Fiber Sensor Technology**, by Kersey, A.D., *SPIE Proceedings* 1367:2-12, *Fiber Optic and Laser Sensors VIII*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Resonant Pumping Schemes for the Er<sup>3+</sup>+ 3  $\mu$ m Laser**, by Stoneman, R.C., Lynn, J.G., and Esterowitz, L., *IEEE Lasers and Electro-Optics Society Annual Meeting*, IEEE, NY, 1990, pp. 521-522.

**A Review of Free Electron Lasers**, by Roberson, C.W.\* and Sprangle, P., Naval Research Laboratory, 1990, pp. 1-143.

**Stimulated Brillouin Scattering and Phase Conjugation of Multiline Hydrogen Fluoride Laser Radiation**, by Whitney, W.T., Duignan, M.T.\*, and Feldman, B.J., *Journal of the Optical Society of America B* 7:2160-2168.

**Synchrotron-Betatron Parametric Instability in Free-Electron Lasers**, by Hafizi, B.\* and Ting, A., *Eleventh International Free Electron Laser Conference*, IEEE, NY, 1990, pp. 468-470.

**Synchrotron-Betatron Parametric Instability in Free-Electron Lasers**, by Hafizi, B.\* and Ting, A., *Physical Review A* 41:2877-2879, 1990.

**Time-Resolved, Simultaneous Density, Temperature, and Absorption Measurements in Dense Laser-Produced Plasmas**, by Kearney, K.J., Mostovych, A.N., and Stamper, J.A., *Review of Scientific Instruments* 61:3596-3599, 1990.

**Tunable CW Solid State Laser Action in the 2  $\mu$ m Region**, by Stoneman, R.C. and Esterowitz, L., *SPIE Proceedings* 1223:231-236, *Solid State Lasers*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

## Magnetism

**Effect of Magnetic Field on D.C. Transport Critical Current Density in Grain-Oriented Y-Ba-Cu-O**, by Francavilla, T.L., Selvamanickam, V.\*, Salama, K., and Liebenberg, D.H.\*, *Cryogenics* 30:606-610, *Critical Currents in High Tc Superconductors*, 1990.

**High-Frequency Fibre-Optic Magnetometer with 70 ft/Hz Resolution**, by Bucholtz, F., Dagenais, D.M.\*, and Koo, K.P.\*, *Electronic Letters* 25:1719-1720, 1989.

**Magnetic-Resonance Exchange Scattering at the Iron LII and LIII Edges**, by Kao, C.\*, Hastings, J.B.\*, Johnson, E.D.\*, Siddons, D.P.\*, Smith, G.C.\*, and Prinz, G.A., *Physical Review Letters* 65:373-376, 1990.

**Mixing and Detection of RF Signals in a Fibre-Optic Magnetostrictive Sensor**, by Bucholtz, F., Dagenais, D.M.\*, and Koo, K.P.\*, *Electronics Letters* 25:1285-1286, 1989.

**Structural and Magnetic Studies on RInPtY (R=La-Tm) Compounds**, by Malik, S.K.\*, Vijayaraghavan, R.\*, Adroja, D.T.\*, Padalia, B.D.\*, and Edelstein, A.S., *Journal of Magnetism and Magnetic Materials* 92:80-86, 1990.

## Mathematics

**Deriving a Result in Decision Theory**, by Feuerman, M.\* and Miller, A.R., *International Journal of Mathematical Education in Science and Technology* 21:785-786, 1990.

**Incomplete Lipschutz-Hankel Integrals of MacDonald Functions**, by Miller, A.R., *Journal of Mathematical Analysis and Applications* 145:504-515, 1990.

**Pattern Classification Using Projection Pursuit**, by Flick, T.E.\*, Jones, L.K.\*, Priest, R.G.\*, and Herman, C., *Pattern Recognition* 23:1367-1376, 1990.

**Reduction Formulae for Kampé de Fériet Functions  $F_{2,1}^{q,1,0}$** , by Miller, A.R., *Journal of Mathematical Analysis and Applications* 151:428-437, 1990.

**Table of Special Function Integrals**, by Piquette, J.C., *SIGSAM Bulletin* 24:8-21, 1990.

**Uncoupling the Differential Equations Arising from a Technique for Evaluating Indefinite Integrals Containing Special Functions or their Products**, by Piquette, J.C., *Quarterly of Applied Mathematics* 48:95-112, 1990.

## Mechanics

**Atomistic Mechanisms and Dynamics of Adhesion, Nanoindentation, and Fracture**, by Landman, U.\*, Luedtke, W.D.\*, Burnham, N.A., and Colton, R.J., *Science* 248:454-461, 1990.

**A Computational Investigation of Local Material Strength and Toughness on Crack Growth**, by Degiorgi, V.G. and Matic, P., *Engineering Fracture Mechanics* 37:1039-1058, 1990.

**The Effect of Substrate on the Elastic Properties of Films Determined by the Indentation Test - Axisymmetric Boussinesq Problem**, by Yu, H.Y., Sanday, S.C., and Rath, B.B., *Journal of the Mechanics and Physics of Solids* 38:745-764, 1990.

**Estimation of the Yield Strength of Metals from Crystal Defect Energies**, by Harvey, D.P. and Jolles, M.I.\*, *Metallurgical Transactions A* 21A: 1719-1723, 1990.

**Fatigue Processes in Metals - Role of Aqueous Environments**, by Sudarshen, T.S.\*, Srivatsan, T.S.\*, and Harvey, D.P., *Engineering Fracture Mechanics* 36:827-852, 1990.

**A Hybrid Numerical Experimental Technique for Determining the Heat Dissipated During Low Cycle Fatigue**, by Wong, A.K. and Kirby, G.C., *Engineering Fracture Mechanics* 37:493-504, 1990.

**Materials for Marine Construction: New Trends, a Synergistic Approach**, by Hasson, D.F.\* and Crowe, C.R., *Sea Technology* 31:45-49, 1990.

**Painting the Phase Space Portrait of an Integrable Dynamical System**, by Coffey, S., Deprit, A.\*, Deprit, E., and Healy, L., *Science* 247:833-836, 1990.

**Relationships Between Fractographic Features and Material Toughness**, by Harvey, D.P. and Jolles, M.I.\*, *ASTM STP 1085:26-38, Quantitative Methods in Fractography*, American Society for Testing and Materials, 1990.

**Turbulent Wall Pressure Fluctuations Over Wavy Surfaces**, by Handler, R.A., *Experiments in Fluids* 10:33-40, 1990.

**Ultrafast Shock Induced Uniaxial Strain in a Liquid**, by Merritt, C.D., Huston, A.L., Justus, B.L., and Campillo, A.J., *Shock Compression of Condensed Matter*, North Holland, NY, 1990, pp. 667-670.

**Viscoplastic Constitutive Modeling of High Strain-Rate Deformation, Material Damage, and Spall Fracture**, by Nemes, J.A., Eftis, J.\*, and Randles, P.W., *Journal of Applied Mechanics* 112:282-291, 1990.

## Metallurgy

**The Anodic Behavior of Ion Beam Mixed Surface Alloys**, by McCafferty, E., Natishan, P.M., and Hubler, G.K., *Corrosion Science* 30:209-221, 1990.

**A Competitive Adsorption Model for the Inhibition of Crevice Corrosion and Pitting**, by McCafferty, E., *Journal of the Electrochemical Society* 137:3731-3737, 1990.

**Creep Behavior and Microstructure of XDTM Titanium Aluminide**, by Feng, C.R., Smith, H.H., Michel, D.J., and Crowe, C.R., *MRS Symposium* 194:219-224, *Intermetallic Matrix Composites*, Materials Research Society, 1990.

**Deformation Processed Composite Wires from Gas-Atomized Cu-Cr-Ag Powder**, by Kampe, J.C., Cooper, K.D., and Ayers, J.D., *Scripta Metallurgica et Materialia* 24:1783-1788, 1990.

**The Effect of Oxygen on Void Stability in Ion-Irradiated Steel**, by Seitzman, L.E., Dodd, R.A.\*, and Kulcinski, G.L.\*, *Metallurgical Transactions A* 21A:1839-1846, 1990.

**Fatigue and Creep Crack Growth in Oxide Dispersion Strengthened INCONEL MA-754**, by Shahinian, P.\* and Sadananda, K., *Metallurgical Transactions A* 21A: 177-187, 1990.

**Fatigue Crack Propagation in an HSLA Steel (MF-80) in Air and in Salt Water**, by Gill, S.J. and Crooker, T.W., *Marine Technology* 27:221-224, 1990.

**Fatigue Crack Propagation in a Rapidly Solidified Al-12.4Fe-1.2V-2.3Si Alloy**, by Smith, H.H. and Michel, D.J., *Metallurgical Transactions A* 21A:499-500, 1990.

**Fatigue Crack Propagation in Ti-47Al/TiB<sub>2</sub> Composites**, by Pao, P.S., Gill, S.J., Pattnaik, A., Michel, D.J., Feng, C.R., and Crowe, C.R., *Fundamental Relationships Between Microstructure and Mechanical Properties of Metal-Matrix Composites*, The Minerals, Metals and Materials Society, 1990, pp. 405-419.

**The Influence of Grain-Boundary Segregation of Y in Cr<sub>2</sub>O<sub>3</sub> on the Oxidation of Cr Metal**, by Cotell, C.M., Yurek, G.J.\*, Hussey, R.J.\*, Mitchell, D.F.\*, and Graham, M.J.\*, *Oxidation of Metals* 34:173-200, 1990.

**The Influence of Grain-Boundary Segregation of Y in Cr<sub>2</sub>O<sub>3</sub> on the Oxidation of Cr Metal. II. Effects of Temperature and Dopant Concentration**, by Cotell, C.M., Yurek, G.J.\*, Hussey, R.J.\*, Mitchell, D.F.\*, and Graham, M.J.\*, *Oxidation of Metals* 34:201-216, 1990.

**Interface Migration During Recrystallization: The Role of Recovery and Stored Energy Gradients**, by Vandermeer, R.A. and Rath, B.B., *Metallurgical Transactions A* 21A:1143-1149, 1990.

**The Interfacial Structure and Habit Plane of Proeutectoid Cementite Plates**, by Spanos, G. and Aaronson, H.I.\*, *Acta Metallurgica et Materialia* 38:2721-2732, 1990.

**Ion-Beam-Sputtered Cu/Ni and Fe/Ni Multilayers**, by Kim, C., Qadri, S.B., Lubitz, P., Schlesinger, T.E.\*, Cammarata, R.C.\*, and Edelstein, A.S., *Materials Science and Engineering A126*:25-28, Office of Naval Research Conference on the Science of Composite Interfaces, 1990.

**Laser Beam Welding of HSLA Steels**, by Metzbowler, E.A., Moon, D.W., and Denney, P.E.\*, *Weldability of Materials: Proceedings of the Materials Weldability Symposium*, ASM International, 1990, pp. 191-200.

**Laser Beam Welding of Titanium**, by Denney, P.E. and Metzbower, E.A., *Laser Materials Processing III*, The Minerals, Metals and Materials Society, Warrendale, PA, 1989, pp. 83-91.

**Laser Beam Welding of Titanium**, by Metzbower, E.A., *Weldability of Materials: Proceedings of the Materials Weldability Symposium*, ASM International, 1990, pp. 311-318.

**Laser Beam Welding. Thermal Profiles and HAZ Hardness**, by Metzbower, E.A., *Second International Conference on Trends in Welding Research*, ASM International, 1989, pp. 397-401.

**Martensites in Rolled XD<sup>TM</sup> Titanium Aluminide**, by Feng, C.R., Michel, D.J., and Crowe, C.R., *Scripta Metallurgica et Materialia* 24:1913-1917, 1990.

**Microstructure, Crystallization and Coercivity of Rare Earth-Iron-Boron Amorphous Alloy Ribbons**, by Das, B.N., D'Antonio, P., and Koon, N.C., *Metallurgical Transactions A* 21A:2805-2814, 1990.

**Microstructures of XD<sup>TM</sup> Titanium Aluminide at Elevated Temperatures**, by Feng, C.R., Michel, D.J., and Crowe, C.R., *Scripta Metallurgica et Materialia* 24:1297-1301, 1990.

**Modeling Diffusional Growth During Austenite Decomposition to Ferrite in Polycrystalline Fe-C Alloys**, by Vandermeer, R.A., Vold, C.L., and King, W.E., *Second International Conference on Trends in Welding Research*, ASM International, 1990, pp. 223-227.

**Modeling Diffusional Growth During Austenite Decomposition to Ferrite in Polycrystalline Fe-C Alloys**, by Vandermeer, R.A., *Acta Metallurgica et Materialia* 38:2461-2470, 1990.

**Modeling of Microstructural Evaluation: Applications to Shape Stability and Mechanical Alloying**, by Courtney, T.H.\*, Kampe, J.C.M., Lee, J.K.\*, and Maurice, D.R.\*, *Diffusion Analysis and Applications*, TMS, Warrendale, PA, 1989, pp. 225-253.

**Numerical Prediction of Welded Joint Performance - Relative Criticality of Weld Defect and Remote Deformation**, by Degiorgi, V.G., Matic, P., and Jolles, M.I.\*, *Journal of Pressure Vessel Technology* 112:175-181, 1990.

**OMCVD of Thin Films from Metal Diketones and Triphenylbismuth**, by Berry, A.D., Holm, R.T., Fatemi, M., and Gaskill, D.K., *Journal of Materials Research* 5:1169-1175, 1990.

**On a Stochastic Theory of Grain Growth-II**, by Pande, C.S. and Dantsker, E.\*, *Acta Metallurgica et Materialia* 38:945-951, 1990.

**Oxygen Ion-Beam Assisted Thin Film Deposition**, by Puckett, R.\*, Stelmack, L.\*, Michel, S.\*, O'Connell, M.J.\*, and Natishan, P., *Surface and Coatings Technology* 41:259-267, 1990.

**Plastic Deformation Burst and Arrest Phenomena in Rapidly Heated Inconel "X" Under Weight Loading**, by Jones, H.N., *Scripta Metallurgica et Materialia* 24:201-206, 1990.

**Plating on Anodized Aluminum-II: The Effect of the Metal, the Anion, and the Aluminum Alloy**, by Zagiel, A.\*, Natishan, P., and Gileadi, E.\*, *Electrochimica Acta* 35:1019-1030, 1990.

**A Short Note on the Microstructure of TiAl/Ti<sub>3</sub>Al**, by Feng, C.R., Michel, D.J., and Crowe, C.R., *Scripta Metallurgica et Materialia* 24:239-240, 1990.

**Stability of the T2 Phase During Low-Dose Ion Milling**, by Reed, J.R., Michel, D.J., and Howell, P.R.\*, *XIIth International Congress for Electron Microscopy*, San Francisco Press, 1990, pp. 964-965.

**Study of Annealing Twins in FCC Metals and Alloys**, by Pande, C.S., Imam, M.A., and Rath, B.B., *Metallurgical Transactions A* 21A:2891-2896, 1990.

**The Use of Ion Beam Assisted Deposition to Modify the Microstructure and Proper**

**ties of Thin Films**, by Smidt, F.A., *International Materials Review* 35:61-128, 1990.

## Nuclear Science

**Charged Particle Spectra of Palladium Thin Films During Low Energy Deuterium Ion Implantation**, by Chambers, G.P.\*, Eridon, J.E., Grabowski, K.S., Sartwell, B.D., and Chrisey, D.B., *Journal of Fusion Energy* 9:281-285, 1990.

## Ocean Science and Technology

**Bioturbation Recorded by a Sedimentary Siloxane**, by Pellenbarg, R.E. and Carhart, H.W., *Applied Organometallic Chemistry* 4:177-180, 1990.

**Current Shear Inertial Wave Interaction in the Sargasso Sea**, by Mied, R.P., Shen, C.Y., and Kidd, J.M., *Journal of Physical Oceanography* 20:81-96, 1990.

**Measurement of Ocean Wave Spectra Using a Three-Frequency Scatterometer Technique**, by Schuler, D.L., Keller, W.C., and Plant, W.J.\*, *IGARSS '90 Volume 3:2161-2164, Remote Sensing Science for the Nineties*, IEEE, NY, 1990.

**A Precision Long Range Navigation and Guidance System for an AUV**, by Hutchison, B.L.\* and Shirley, D.E., *Oceans '90, Conference Proceedings. Engineering in the Ocean Environment*, IEEE, NY, 1990, pp. 594-599.

**Reflection of Weak Shocks from a Fluid-Fluid Interface**, by McDonald, B.E. and Kuperman, W.A., *Frontiers of Nonlinear Acoustics; Proceedings of the 12th International Symposium on Nonlinear Acoustics*, Elsevier Science Publishers, NY, 1990, pp. 277-282.

**Reliability Testing of Long Life Underwater Components**, by Bray, A.V.\* and Arnett, S.L.\*, *Under Seas Defense '89*, Marine Technology Society, 1989, pp. 47-51.

**Tracer Evolution (Time in Inertial Periods)**, by Mied, R.P., McWilliams, J.C.\*, and Lindemann, G.J., *EOS Transactions, American Geophysical Union* 71:1837, 1990.

## Optical Sciences

**Acousto-Optic Compressing Photodetector Approach for CW Signals**, by Kub, F.J. and Anderson, G.W., *SPIE Proceedings* 1291:143-151, *Optical and Digital GaAs Technologies for Signal Processing Applications*, Society of Photo-optical and Instrumentation Engineers, Bellingham, WA, 1990.

**Analysis of Input-Polarization-Induced Phase Noise in Interferometric Fiber-Optic Sensors and its Reduction Using Polarization Scrambling**, by Kersey, A.D., Marrone, M.J., and Dandridge, A., *Journal of Lightwave Technology* 8:838-845, 1990.

**Applications of Fiber-Optic Sensors**, by Kersey, A. and Dandridge, A., *IEEE Transactions on Components, Hybrids, and Manufacturing Technology* 13:137-143, 1990.

**Broadband Aerosol Absorption Measurements Using Photothermal Interferometry and Step-Scanned Fourier Transform Spectrometry**, by Eversole, J.D.\*, Merritt, C.D., Lin, H.B., and Campillo, A.J., *IEEE Lasers and Electro-Optics Society Annual Meeting*, IEEE, 1990, pp. 158-163.

**Calculation of Scattering Loss as a Function of Cooling Rate for a Fluorozirconate Glass**, by Lu, G.\*, Hart, P.\*, and Aggarwal, I.D., *Physics and Chemistry of Glasses* 31:205-208, 1990.

**Chromatic Time Lag in Picosecond Streak Camera Measurements**, by Duncan, M.D., Mahon, R.\*, Tankersley, L.L.\*, and Reintjes, J., *Applied Optics* 29:2369-2370, 1990.

**Comment on "Thermal Noise in a Fiber Optic Sensor"**, by Mermelstein, M., *Journal of the Acoustical Society of America* 87:1362-1363, 1990.

**Control Of Parameters Affecting Optical Path Distortion In Heavy Metal Fluoride Glass Windows**, by Jewell, J.M. and Aggarwal, I.D., *SPIE Proceedings* 1327:190-197, *Properties and Characteristics of Optical Glass II*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Control of Transverse Spatial Modes in Transient Stimulated Raman Amplification**, by Duncan, M.D., Mahon, R.\*, Tankersley, L.L.\*, and Reintjes, J., *Journal of the Optical Society of America B* 7:1336-1345, 1990.

**Derivation and Analysis of a Least Mean Square Filter**, by Schwartz, I.B., *Mathematical Computer Modelling* 13:37-44, 1990.

**Design Parameters for Fluoride Multimode Fluoride Fibers: Effects of Coating and Bending on Loss**, by Busse, L.E. and Aggarwal, I.D., *MRS Symposium Proceedings* 172:177-182, *Optical Fiber Materials and Processing*, Materials Research Society, Pittsburgh, PA, 1990.

**Diode Pumped Single Mode Fluoro-zirconate Fiber Laser from the  $^4I_{11/2} \rightarrow ^4I_{13/2}$  Transition in Erbium**, by Allen, R., Esterowitz, L., and Ginther, R.J.\*, *Applied Physics Letters* 56:1635-1637, 1990.

**Effect of Intrinsic Phase Mismatch of Linear Modulator Performance of the 1x2 Directional Coupler and Mach-Zehnder Interferometer**, by Howerton, M.M.\*, Bulmer, C.H., and Burns, W.K., *Journal of Lightwave Technology* 8:1177-1186, 1990.

**Effect of Small Silica Additions on the Properties and Structure of Calcium Aluminate Glasses**, by Higby, P.L., Merzbacher, C.I., Aggarwal, I.D., and Friebele, E.J., *SPIE Proceedings* 1327:198-202, *Properties and Characteristics of Optical Glass II*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Effects of Multi-Pump Beam Coupling on Intensity Enhancement of a Probe Beam Protorefractive Two-Wave Mixing**, by Gilbreath, G.C. and Davidson, F.M.\*, *Microwave and Optical Technology Letters* 3:217-222, 1990.

**Efficient Room Temperature Operation of a Flash-Lamp-Pumped, Cr, Tm: YAG Laser at 2.01  $\mu\text{m}$** , by Quarles, G.J., Rosenbaum, A.\*, Marquardt, C.L., and Esterowitz, L., *Optics Letters* 15:42-44, 1990.

**Efficient, Broadly Tunable Laser-Pumped Tm:YAG and Tm:YSGG**, by Stoneman, R.C. and Esterowitz, L., *Optics Letters* 15:486-488, 1990.

**Excess Noise in Fiber Gyroscope Sources**, by Burns, W.K., Moeller, R.P., and Dandridge, A., *IEEE Photonics Technology Letters* 2:606-608, 1990.

**Excitonic Optical Nonlinearity in Quantum-Confined CuCl-Doped Boro-silicate Glass**, by Justus, B.L., Seaver, M.E., Ruller, J.A.\*, and Campillo, A.J., *Applied Physics Letters* 57:1381-1383, 1990.

**Fiber Interferometric Sensors: Technology and Applications**, by Bucholtz, F. and Yurek, A.M., *Optics News* 15:11-20-27, 1990.

**Fiber Optic Gyroscope Technology**, by Kersey, A.D., Dandridge, A., and Burns, W.K., *Optics News* 1989, pp. 12-19.

**Fluorescence Probe of the Adsorption Geometries of Rhodamine 6G on a Fused Silica Surface**, by Huston, A.L. and Reimann, C.T., *IEEE Lasers and Electro-Optics Society Annual Meeting*, IEEE, NY, 1990, pp. 175-176.

**Forward Photorefractive Multi-Beam Mixing In  $\text{BaTiO}_3$** , by Gilbreath, G.C., *SPIE Proceedings* 1334:169-181, *Current Developments in Optical Engineering IV*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Frequency Pulling of Stimulated Raman Scattering in Microdroplets**, by Lin, H.B., Eversole, J.D.\*, and Campillo, A.J., *Optics Letters* 15:387-389, 1990.

**The Frequency Response of Condensed Phase Media to Femtosecond Optical Pulses: Spectral-Filter Effects**, by McMorro, D., *Chemical Physics Letters* 174:85-94, 1990.

**Frequency-Division Based Polarization Diversity Scheme for Overcoming Signal Fading in an Interferometric Sensor**, by Weis, R.S., Marrone, M.J.\*, and Kersey, A.D., *IEEE Lasers and Electro-Optics Society Annual Meeting*, IEEE, NY, 1990, pp. 190-192.

**High-Power Superfluorescent Fiber Sources**, by Duling, I.N., Burns, W.K., and Goldberg, L., *Optics Letters* 15:33-35, 1990.

**Identification of Morphology Dependent Resonances in Stimulated Raman Scattering from Microdroplets**, by Lin, H.B., Eversole, J.D.\*, and Campillo, A.J., *Optics Communications* 77:407-410, 1990.

**Instrumentation for Time-Resolved Electron Diffraction**, by Ewbank, J.D.\*, Faust, W.L., Monts, D.L.\*, Paul, D.W.\*, Schafer, L.\*, Bakhtiar, R.\*, and Dou, Q.\*, *Molecular Crystals and Liquid Crystals* 187:351-356, 1990.

**Interlaboratory Comparison of Radiation Induced Attenuation in Optical Fibers. Part II: Steady-State Exposures**, by Taylor, E.W.\*, Friebele, E.J., Henschel, H.\*, West, R.H.\*, Krinsky, J.A.\*, and Barnes, C.E.\*, *Journal of Lightwave Technology* 8:967-976, 1990.

**Interlaboratory Comparison of Radiation Induced Attenuation in Optical Fibers. Part III: Transient Exposures**, by Friebele, E.J., Lyons, P.B.\*, Blackburn, J.\*, Henschel, H.\*, Johan, A.\*, Krinsky, J.A.\*, Robinson, A.\*, Schneider, W.\*, Smith, D.\*, Taylor, E.W.\*, Turquet de Beauregard, G.Y.\*, West, R.H.\*, and Zagarino, P.\*, *Journal of Lightwave Technology* 8:977-989, 1990.

**Inverse Scattering Theory for Phase Conjugate Reflection Coefficients: Application to Optical Switching**, by Jordan, A.K., Lakshmanasamy, S.\*, and Xia, J.\*, *Inverse Methods in Action. Proceedings of the Multi-centennials Meeting on Inverse Problems*, Springer-Verlag, NY, 1990, pp. 342-346.

**Inverse Scattering with Slowly Fluctuating Quasi-Homogeneous Media**, by Carter, W.H., *SPIE Proceedings* 1351:223-226, *Digital Image Synthesis and Inverse Optics*, Society of Photo-optical and Instrumentation Engineers, Bellingham, WA, 1990.

**Investigation of Differential Induced Attenuation of Orthogonal Axes in Polarization Maintaining Fibers**, by Gingerich, M.E., Hickey, S.J.\*, Harrington, C.C.\*, Marrone, M.J., Friebele, E.J., Looney, L.D.\*, and Onstott, J.R.\*, *MRS Symposium Proceedings* 172:111-117, *Optical Fiber Materials and Processing*, Materials Research Society, Pittsburgh, PA, 1990.

**Laser Beam Propagation in Turbulent Conditions**, by Searles, S.K., Hart, G.A.\*, Dowling, J.A.\*, and Hanley, S.T.\*, *Applied Optics* 30:401-406, 1990.

**Materials Effects on the Radiation Sensitivity of Single Mode Optical Fibers**, by Friebele, E.J., Askins, C.G., Gingerich, M.E., Shaw, C.M.\*, and Schmidt, W.H.\*, *MRS Symposium Proceedings* 172:103-109, *Optical Fiber Materials and Processing*, Materials Research Society, 1990.

**Methods in Calibration and Error Analysis for Imaging Radiometers**, by Fraedrich, D.S., *SPIE Proceedings* 1109:30-38, *Optical Radiation Measurements II*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA.

**Narrow-Gap Nonlinear Optical Materials**, by Youngdale, E.R., Hoffman, C.A., Meyer, J.R., Bartoli, F.J., Han, J.W.\*, Cook, J.W.\*, Schetzina, J.F.\*, and Martinez, A.\*, 161:397-402, *Properties of II-VII Semiconductors: Bulk Crystals, Epitaxial Films, Quantum Well Structures and Dilute Magnetic Systems*, Materials Research Society, 1990.

**Noncontact Fluorescence Thermometry of Acoustically Levitated Water Drops**, by Seaver, M. and Peele, J.R., *Applied Optics* 29:4956-4961, 1990.

**Nonlinear Mie Scattering: Electrostrictive Coupling of Light to Droplet Acoustic Modes**, by Huston, A.L., Lin, H.B., Eversole, J.D.\*, and Campillo, A.J., *Optics Letters* 15:1176-1178, 1990.

**Nonlinear Optical Processes**, by Reintjes, J.F., *Encyclopedia of Modern Physics*, Academic Press, NY, 1990, pp. 361-414.

**Nonlinear Optical Properties of Molecular Beam Epitaxy Grown  $\text{Bi}_{1-x}\text{Sb}_x$** , by Youngdale, E.R., Meyer, J.R., Hoffman, C.A., Bartoli, F.J., Partin, D.L.\*, Thrush, C.M.\*, and Heremans, J.P.\*, *Applied Physics Letters* 57:336-338, 1990.

**Nonuniformity Correction for Staring IR Focal Plane Arrays Using Scene-Based Techniques**, by Scribner, D.A., Sarkady, K.A., Caulfield, J.T.\*, Kruer, M.R., Katz, G., Gridley, C.J., and Herman, C.\*, *Proceedings 1308:224-233, Infrared Detectors and Focal Plane Arrays*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Optical Techniques for Microwave Generation, Transmission, and Control**, by Goldberg, L., Esman, R.D., and Williams, K.J., *IEEE MTT-S International Microwave Symposium Digest*, IEEE, NY, 1990, pp. 229-232.

**Origin and Elimination of Scattering Losses in Fluoride Glasses and Fibers**, by Sanghera, J.S.\*, Aggarwal, I.D., Harbison, B., Busse, L., Pureza, P., Hart, P.\*, Sachon, M.G.\*, Sills, L.\*, and Miklos, R.\*, *MRS Symposium Proceedings 172:157-162, Optical Fiber Materials and Processing*, Materials Research Society, Pittsburgh, PA, 1990.

**Oxygen Atom Detection Using Third Harmonic Generation**, by Celii, F.G.\*, Thorsheim, H.R., Hanratty, M.A.\*, and Butler, J.E., *Applied Optics* 29:3135-3142, 1990.

**Phase Pulling in Transient Raman Amplifiers**, by Duncan, M.D., Mahon, R.\*, Tankersley, L.L.\*, Hilfer, G.\*, and Reintjes, J., *Journal of the Optical Society of America* 7:202-210, 1990.

**Photoluminescence Induced By 6.4 eV Photons In High Purity Silica**, by Tsai, T.E.\* and Lin, H.B., *MRS Symposium Proceedings 172:125-131, Optical Fiber Materials and Processing*, Materials Research Society, Pittsburgh, PA, 1990.

**Photorefractive Two-Wave Mixing in Tantalum-Doped Potassium Niobate**, by Clement, A.E. and Gilbreath, G.C., *SPIE Proceedings 1334:200-209, Current Developments in Optical Engineering IV*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Photorefractive Two-Wave Mixing in Tantalum-Doped Potassium Niobate**, by Clement, A.E. and Gilbreath, G.C., *SPIE Proceedings 1338:165-174, Optoelectronic Devices and Applications*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Planar Flexible Fiber-Optic Acoustic Sensors**, by Lagakos, N., Hickman, T.R., Ehrenfeuchter, P., Bucaro, J.A., and Dandridge, A., *Journal of Lightwave Technology* 8:1298-1303, 1990.

**Programmable Frequency Excision and Adaptive Filtering with a GaAs/AlGaAs/GaAs Heterojunction Photoconductor Array**, by Anderson, G.W., Kub, F.J., Grant, R.L.\*, Papanicolaou, N.A., Modolo, J.A., and Brown, D.E.\*, *Optical Engineering* 29:1243-1248, 1990.

**Radiation Effects in Polarization Maintaining Fibers**, by Friebele, E.J., Gingerich, M.E., Brambani, L.A.\*, Harrington, C.C.\*, and Hickey, S.J.\*, *SPIE Proceedings 1314:146-154, Fibre Optics '90*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Recent Developments in Fiber Optic Magnetostrictive Sensors**, by Bucholtz, F., Dagenais, D.M., Koo, K.P., and Vohra, S., *SPIE Proceedings 1367:226-235, Fiber Optic and Laser Sensors VIII*, 1990.



**Rotational Raman Gain Suppression in Hz**, by Duncan, M.D., Mahon, R.\*, Tankersley, L.L.\*, and Reintjes, J., *Optics Communications* 64:466-473, 1987.

**Scattering from Quasi-Homogeneous Time Fluctuating Radiating Media**, by Carter, W.H., *Optics Communications* 77:121-125, 1990.

**Signal-to-Noise Ratio Enhancement Scheme for Fiber-Optic Magnetometers Using Dual Excitation**, by Koo, K.P., Dagenais, D.M., Vohra, S., and Bucholtz, F., *IEEE Lasers and Electro-Optics Society Annual Meeting*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990, pp. 197-198.

**Spatial Light Modulators: Functional Capabilities, Applications, and Devices**, by Fisher, A.D., *International Journal of Optoelectronics* 5:125-167, 1990.

**Special Optical Fiber Sensors Issue**, by Giallorenzi, T.G. and Ezekiel, S.\*, *Optics News* 15:11, 1989.

**Spectrum Analysis with Integrated Optics**, by Hamilton, M.C.\* and Spezio, A.E., *Guided Wave Acousto-Optics*, Springer-Verlag, NY, 1990, pp. 235-271.

**Standardized Measurements for Determining the Radiation-Induced Attenuation in Optical Fibers**, by Taylor, E.W.\*, Friebele, E.J., and Lyons, P.B.\*, NIST-SP-792: 159-162, *Technical Digest - Symposium on Optical Fiber Measurements, 1990*, U.S. Government Printing Office, Washington, D.C., 1990.

**Test and Evaluation of Stability in IR Staring Focal Plane Arrays after Nonuniformity Correction**, by Scribner, D.A., Sarkady, K.A.\*, Kruer, M.R., and Gridley, C.J., *SPIE Proceedings* 1108:255-264, *Test and Evaluation of Infrared Detectors and Arrays*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1989.

**Ultraviolet Optical Isolators Utilizing KDP-Isomorphs**, by Dexter, J.L., Landry, J.\*, Cooper, D.G.\*, and Reintjes, J.F., *Optics Communications* 80:115-118, 1990.

**Voltage-Length Product for Modal Evolution-Type Digital Switches**, by Burns, W.K., *Journal of Lightwave Technology* 8:990-997, 1990.

**Wavelength Dependence of the Scattering Loss in Fluoride Optical Fibers**, by Busse, L.E., McCabe, G.H.\*, and Aggarwal, I.D., *Optics Letters* 15:423-424, 1990.

## Physics

**Ablative Rayleigh-Taylor Instability in Three Dimensions**, by Dahlburg, J.P. and Gardner, J.H., *Physical Review A* 41:5695-5698, 1990.

**Accuracy of Three-Body Wave Functions Obtained with the Correlation Function Hyperspherical-Harmonic Method**, by Haftel, M.I. and Mandelzweig, V.B.\*, *Physical Review A* 42:6324-6332, 1990.

**Beam Breakup in Recirculating Induction Accelerators**, by Lau, Y.Y. and Colombant, D.G., *Applied Physics Letters* 55:2673-2675, 1989.

**Bloch-Symmetric Fusion in PdD<sub>x</sub>**, by Chubb, T.A.\* and Chubb, S.R., *Fusion Technology* 17:710-712, 1990.

**Breakdown of Time-Temperature Superposition in Miscible Polymer Blends and the Coupling Scheme**, by Ngai, K.L. and Plazek, D.J.\*, *Macromolecules* 23:4282-4287, 1990.

**Catalytic Carbide Formation at Aluminum-Carbon Interfaces**, by Maruyama, B., Ohuchi, F.S.\*, and Rabenberg, L.\*, *Journal of Materials Science Letters* 9:864-866, 1990.

**Ce-Valence Variations Within the Anderson Model Framework**, by Liang, G.\*, Chen, J.\*, Croft, M.\*, and Edelstein, A.S., *Physica B and C* **163**:355-357, *Proceedings of the International Conference on the Physics of Highly Correlated Electron Systems*, 1990.

**Chaotic Acoustoelectric Oscillations in Sb in a Magnetic Field**, by Skorupka, C.W., Pecora, L.M., Carroll, T.L., and Tritt, T.M., *Physical Review B* **42**:9252-9254, 1990.

**Comparative Fractography of Chemical Vapor and Combustion Deposited Diamond Films**, by Hoff, H.A., Morrish, A.A., Butler, J.E., and Rath, B.B., *Journal of Materials Research* **5**:2572-2588, 1990.

**A Comparison of Boiling in Thin, Falling Films and Pool Boiling from a Vertical Cylinder**, by Cerza, M., HTD- 114:63-67, *Heat Transfer with Phase Change*, 1989.

**Correction to "Normal Mode Analysis of Waveguide Devices. Part I: Theory" and "Normal Mode Analysis of Waveguide Devices. Part II: Device Output and Crosstalk"**, by Burns, W.K., *Journal of Lightwave Technology* **7**:1425, 1989.

**Correlation-Function Hyperspherical Harmonic Calculations of the ppu, ddu, and ttu Molecular Ions**, by Haftel, M.I. and Mandelzweig, V.B., *Physical Review A* **41**:2339-2343, 1990.

**Diffuse Elastic Scattering of Atoms from Surface Steps**, by Skorupka, C.W. and Manson, J.R.\*, *Physical Review B* **41**:8156-8163, 1990.

**Double-Resonance Stimulated Raman Scattering in Micrometer-Sized Droplets**, by Lin, H.B., Huston, A.L., Eversole, J.D.\*, and Campillo, A.J., *Journal of the Optical Society of America B* **7**:2079-2089, 1990.

**e<sup>-</sup>-Beam Deposition of Tetragonal ZrO<sub>2</sub> Films Stabilized with Alumina and Scandia**, by Qadri, S.B., Skelton, E.F., Harford, M.\*, Lubitz, P., and Aprigliano, L.\*, *Journal of Vacuum Science and Technology A* **8**:2344-2346, 1990.

**e<sup>-</sup>-Beam Deposition of ZrO<sub>2</sub>-Sc<sub>2</sub>O<sub>3</sub> Films**, by Qadri, S.B., Skelton, E.F., Harford, M.\*, Lubitz, P., and Aprigliano, L.\*, *Journal of Applied Physics* **67**:2655-2657, 1990.

**Effect of Aluminum Fluoride on the Physical Properties and Stability of Fluoro-zirconate and Fluorozircon-Hafnate Glasses**, by Sanghera, J.S.\*, Hart, P.\*, Sachon, M.G.\*, Busse, L., and Aggarwal, I.D., *Journal of the American Ceramic Society* **73**:2677-2683, 1990.

**Effect of Composition on Dielectric and Viscoelastic Properties of Meta-Tetramethyl Xylene Diisocyanate Based Polyurethanes**, by Capps, R.N., Stack, G.M., and Beumel, L.L.\*, *Nineteenth North American Thermal Analysis Society*, North American Thermal Analysis Society, 1990, pp. 251-256.

**An Electrical Characterization of DPPE/Valinomycin Films on Platinum Surfaces in Aqueous Solutions**, by Fare, T.L. and Chang, E., *11th International Conference of the IEEE Engineering in Medicine and Biology Society*, IEEE, 1989, pp. 1377-1378.

**Electron Accelerators Driven by Modulated Intense Relativistic Electron Beams**, by Friedman, M., Serlin, V., Lau, Y.Y., and Krall, J., *Physical Review Letters* **63**:2468-2471, 1989.

**Exact Integral Operator Form of Wigner Distribution-Function Equation in Many-Body Quantum Transport Theory**, by Buot, F.A., *Journal of Statistical Physics* **61**:1223-1256, 1990.

**Fabrication of Bond and Etch-Back Silicon on Insulator Using Strained Si<sub>0.7</sub>Ge<sub>0.3</sub> Layer as an Etch Stop**, by Godbey, D.J., Twigg, M.E., Hughes, H.L., Palkuti, L.J.\*, Leonov, P.\*, and Wang, J.J.\*, *Journal of the Electrochemical Society* **137**:3219-3223, 1990.

**Far Infrared Photoresponse of Quasi-Two Dimensional Granular NbN/BN Films**, by Strom, U., Culbertson, J.C., Wolf, S.A., Perkowitz, S., and Carr, G.L.\*, *Physical Review B* **42**:4059-4063, 1990.

**Hertzian Stress Contribution to Low Friction Behavior of Thin MoS<sub>2</sub> Coatings**, by Singer, I.L., Boster, R.N., Wegand, J.\*, Fayeulle, S.\*, and Stupp, B.C.\*, *Applied Physics Letters* 57:995-997, 1990.

**High Field Specific Heat and Susceptibility Measurements on Single Crystal CeCu<sub>6</sub>**, by Edelstein, A.S., Das, B.N., Fuller, W.W., Andraka, B.\*, and Stewart, G.R.\*, *Physica B and C* 163:504-506, 1990.

**High-Capacity Superconducting Current Leads of Y<sub>1</sub>Ba<sub>2</sub>Cu<sub>3</sub>O<sub>7-x</sub>**, by Gubser, D.U., Miller, M.M., Alford, N.M.\*, and Button, T.W.\*, *Journal of Superconductivity* 3:221-226, 1990.

**High-Current Beam Transport Experiments Using Foil Focussing**, by Antoniadis, J.A.\*, Meger, R.A., Peyser, T.A.\*, Myers, M.C., and Humphries, S.\*, *IEEE Pulsed Power Conference*, IEEE, 1989, pp. 931-933.

**High-Fluence Large-Area MeV Proton-Beam Diagnostics**, by Young, F.C., Stephanakis, S.J., Scherrer, V.E.\*, Mosher, D., and Richter, S.H.\*, *Review of Scientific Instruments* 61:3122-3124, 1990.

**Hybrid Ferromagnetic-Semiconductor Structures**, by Prinz, G.A., *Science* 250:1092-1097, 1990.

**Inelastic Scattering from Einstein Modes of Surface Defects**, by Skorupka, C.W. and Manson, J.R.\*, *Physical Review B* 41:9783-9789, 1990.

**Interaction of Metallized Tubules with Electromagnetic Radiation**, by Behroozi, F.\*, Orman, M.\*, Reese, R.\*, Stockton, W.\*, Calvert, J., Rachford, F., and Schoen, P., *Journal of Applied Physics* 68:3688-3693, 1990.

**Inverse Cascades in 2D Compressible Turbulence. I. Incompressible Forcing at Low Mach Number**, by Dahlburg, J.P., Dahlburg, R.B., Gardner, J.H., and Picone, J.M., *Physics of Fluids A* 2:1481-1486, 1990.

**Linear Theory of a Field-Emitter-Array Distributed Amplifier**, by Ganguly, A.K., Phillips, P.M., Gray, H.F., and Smith, S.T.\*, *Journal of Applied Physics* 67:7098-7110, 1990.

**Linearized Geometrical-Dynamics Treatment of the Stability of Converging Shocks**, by Book, D.L., *Physics of Fluids A* 2:635-637, 1990.

**Lithography with a 50KV e Beam and a Vacuum Scanning Tunneling Microscope in a Polydiacetylene Negative Resist**, by Dobisz, E.A., Marrian, C.R.K., and Colton, R.J., *Journal of Vacuum Science and Technology* B8:1754-1758, 1990.

**Local-Density-Functional Total Energy Gradients in the Linear Combination of Gaussian-Type Orbitals Methods**, by Dunlap, B.I., Andzelm, J.\*, and Mintmire, J.W.\*, *Physical Review A* 42:6354-6359, 1990.

**Magnetic Coupling in High Moment f.c.c.-Fe/Ni Multilayers**, by Edelstein, A.S., Kim, C., Qadri, S.B., Kim, K.H., Browning, V., Yu, H.Y., Maruyana, B., and Everett, R.K., *Solid State Communications* 76:1379-1382, 1990.

**Magnetic Hyperfine Interactions in GdAl<sub>3</sub>**, by Ruggiero, N.G.\*, Cook, D.C.\*, and Edelstein, A.S., *Hyperfine Interactions* 54:689-694, *Proceedings of the International Conference on the Applications of the Mossbauer Effect. Part II*, 1990.

**Magnetorefectivity Study of Excitons in ZnCoSe**, by Liu, X.\*, Petrou, A.\*, Jonker, B.T., Krebs, J.J., Prinz, G.A., and Warnock, J.\*, *Journal of Applied Physics* 67:4796-4797, *Proceedings of the Thirty-Fourth Annual Conference on Magnetism and Magnetic Materials*, 1990.

**Microanalysis of Cuprate Superconductors Using the Color of Polarization**, by Hoff, H.A., Lechter, W.L.\*, Osofsky, M.S., and Candela, G.A., *MRS Symposium Proceedings* 169:361-364, *High-Temperature Superconductors: Fundamental Properties and Novel Materials Processing*, Materials Research Society, Pittsburgh, PA, 1990.

**Microstructural and Superconductive Studies of Ag-YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-x</sub> Composites**, by Khan, H.R.\*, Francavilla, T.L., Hein, R.A., Pande, C.S., Qadri, S.B., Soulen, R.J., and Wolf S.A., *Journal of Superconductivity* 3:189-195, 1990.

**Microstructure and Optical Microscopy of Pr Containing Cuprates**, by Mulville, K.T.\*, Wimer, N.G.\*, Hoff, H.A., Richards, L.E., and Browning, V.M., *High Temperature Superconducting Compounds II*, The Minerals, Metals and Materials Society, 1990, pp. 433-442.

**Modelling Complex Intramolecular Processes Using Constrained Molecular Dynamics**, by Lambrakos, S.G. and Peyrard, M.\*, *Journal of Chemical Physics* 93:4329-4338, 1990.

**Molecular Beam Epitaxy Versus Chemical Vapor Deposition of Silicon on Sapphire**, by Richmond, E.D., Twigg, M.E., Qadri, S.B., Pellegrino, J.G.\*, and Duffey, M.T.\*, *Applied Physics Letters* 56:2551-2553, 1990.

**Molecular Dynamics Studies of Dislocations in Si**, by Duesbery, M.S.\*, Michel, D.J., and Joos, B.\*, *MRS Symposium Proceedings* 163:941-944, *Impurities, Defects and Diffusion in Semiconductors: Bulk and Layered Structures*, Materials Research Society, Pittsburgh, PA, 1990.

**Nanoindentation Study of the Mechanical Properties of Copper-Nickel Multilayered Thin Films**, by Cammarata, R.C.\*, Schlesinger, T.E.\*, Kim, C., Qadri, S.B., and Edelstein, A.S., *Applied Physics Letters* 56:1862-1864, 1990.

**The Nonequilibrium Character of the Aerosol Charge Distributions Produced by Neutralizers**, by Hoppel, W.A. and Frick, G.M., *Aerosol Science and Technology* 12:471-496, 1990.

**Nonlinear Theory of the Slow-Wave Cyclotron Amplifier**, by Ganguly, A.K. and Ahn, S., *Physical Review A* 42:3544-3554, 1990.

**Optically Resonant Phenomena in Micrometer Sized Droplets**, by Lin, H.B., Eversole, J.D.\*, Huston, A.L., and Campillo, A.J., *Third International Aerosol Conference*, Pergamon Press, 1990, pp. 285-289.

**Probing the Surface Forces of Monolayer Films With an Atomic Force-Microscope**, by Burnham, N.A., Dominguez, D.D., Mowery, R.L., and Colton, R.J., *Physical Review Letters* 64:1931-1934, 1990.

**QED Contributions to the 3s-3p Transitions in Highly-Charged Na-Like Ions**, by Seely, J.F. and Wagner, R.A.\*, *Physical Review A* 41:5246-5249, 1990.

**Reinitiation and Feedback in Global Instabilities of Subsonic Spatially Developing Mixing Layers**, by Grinstein, F.F., Oran, E.S., and Boris, J.P., *Physical Review Letters* 64:870-873, 1990.

**Relief of Compressive Biaxial Strains in Thin Films via Microtwins**, by Twigg, M.E.\*, Richmond, E.D., and Pellegrino, J.G.\*, *Journal of Applied Physics* 67:3706-3710, 1990.

**Scaling of Dielectronic-Recombination Data in Fluorine-Like Ions**, by Dasgupta, A. and Whitney, K.G., *Physical Review A* 42:2640-2654, 1990.

**A Si<sub>0.7</sub>Ge<sub>0.3</sub> Strained-Layer Etch Stop for the Generation of Thin Layer Undoped Silicon**, by Godbey, D., Hughes, H., Kub, F., Twigg, M.E., Palkuti, L.\*, Leonov, P.\*, and Wang, J.\*, *Applied Physics Letters* 56:373-375, 1990.

**A Soft X-Ray Emission Spectroscopy Investigation of Bi<sub>2</sub>Sr<sub>2</sub>CaCu<sub>2</sub>O<sub>8</sub>**, by Mueller, D.R.\*, Ederer, D.E.\*, Rubensson, J.E.\*, Shuker, R.\*, Wallace, J.\*, Zhang, C.H.\*, Jai, J.\*, Callcott, T.A.\*, Dong, Q.Y.\*, Toth, L.E., Rayne, R., and Osofsky, M., *Physica Scripta* 41:979-983, 1990.

**Spatial Effects in Transient Stimulated Raman Scattering**, by Reintjes, J., Duncan, M.D., Mahon, R.\*, and Tankersley, L.L.\*, *Resonances: A Volume in Honor of the 70th Birthday of Nicolaas Bloembergen*, World Scientific, 1990, pp. 70-79.

**Spherical-Cavity-Mode Assignments of Optical Resonances in Microdroplets Using Elastic Scattering**, by Eversole, J.D.\*, Lin, H.B., Huston, A.L., and Campillo, A.J., *Journal of the Optical Society of America A* 7:2159-2168, 1990.

**Stopping and Range/Energy Relations for Charged, Massive Particles (CHAMPS) in Silicon**, by Mueller, G.P., *Physics Letters B* 245:681-686, 1990.

**Symmetry and Cluster Magnetism**, by Dunlap, B.I., *Physical Review A* 41:5691-5694, 1990.

**Synchronization in Chaotic System**, by Pecora, L.M. and Carroll, T.L., *Physical Review Letters* 64:821-824, 1990.

**Three-Center Gaussian-Type-Orbital Integral Evaluation Using Solid Spherical Harmonics**, by Dunlap, B.I., *Physical Review A* 42:1127-1137, 1990.

**Three-Dimensional Nonlinear Analysis of the Cerenkov Maser**, by Freund, H.P.\* and Ganguly, A.K., *Nuclear Instruments and Methods in Physics Research A* 296:462-467, *The 15th International Conference on Infrared and Millimeter Waves*, 1990.

**A Unified Approach to the Description of High Tc Oxides: Major Normal and Superconducting Parameters**, by Wolf, S.A. and Kresin, V. Z.\*, *Advances in Superconductivity II*, Springer-Verlag, NY, 1990, pp. 447-450.

**An Upper Limit on Cold Fusion in Thin Palladium Films**, by Chambers, G.P., Eridon, J.M., and Grabowski, K.S., *Physical Review B* 1990:5388-5391, 1990.

**Use of Computer Simulations to Determine Steady-State Distributions in Ion Bombardment**, by Manning, I., *Radiation Effects and Defects in Solids* 112:5-10, 1990.

**XPS Analysis of the Chemistry of the Sapphire Surface as a Function of High Temperature Vacuum Annealing**, by Richmond, E.D., *MRS Symposium Proceedings* 159:253-256, *Atomic Scale Structures of Interfaces*, Materials Research Society, Pittsburgh, PA, 1990.

## Plasma Physics

**Aluminum Wire Array Implosions: Comparison of Experiments and Simulation**, by Giuliani, J.L., Rogerson, J.E., Deeney, C.\*, Nash, T.\*, Prasad, R.R.\*, and Krishnan, M.\*, *Journal of Quantitative Spectroscopy and Radiative Transfer* 44:471-484, 1990.

**Anomalous Resistivity and the Pease-Braginskii Current in a Z-Pinch**, by Robson, A.E., *Physical Review Letters* 63:2816-2818, 1989.

**Application of Intense Relativistic Electron Beams in RF Generation - Relativistic Klystron Amplifier**, by Friedman, M., Serlin, V., Lau, Y.Y., and Krall, J.\*, *AIP Conference Proceedings* 193:104-110, *Advanced Accelerator Concepts*, American Institute of Physics, NY, 1989.

**Atomic Processes in Plasmas**, edited by Elton, R.C. and Kim, Y.K.\*, 206:1-288, *Atomic Processes in Plasmas*, American Institute of Physics, 1990.

**Basic Considerations for Scaling Z-Pinch X-ray Emission with Atomic Number**, by Whitney, K.G., Thornhill, J.W., Apruzese, J.P., and Davis, J., *Journal of Applied Physics* 67:1725-1735, 1990.

**Calculation of the Line Emission from Cylindrical Krypton Plasmas Using a 162-Level, 511-Line Detailed Configuration Atomic Model**, by Apruzese, J.P. and Kepple, P.C., *Journal of Quantitative Spectroscopy and Radiative Transfer* 44:529-540, 1990.

**Comment on "Cascade Focusing in the Beat-Wave Accelerator"**, by Esarey, E. and Ting, A., *Physical Review Letters* 65:1961-1962, 1990.

**The Dense Z-Pinch as a Small Fusion Reactor**, by Robson, A.E., *AIP Conference Proceedings* 195:362-375, *Dense Z-Pinches*, American Institute of Physics, NY, 1989.

**Dense Z-Pinches**, by Pereira, N.R., ed.\*, Davis, J., ed., and Rostoker, N., ed.\*, *AIP Conference Proceedings* 195:1-537, *Dense Z-Pinches*, American Institute of Physics, New York, 1989.

**Density Sensitive Line Ratios for Highly Ionized Atoms of the CuI and NaI Isoelectronic**, by Feldman, U., Doschek, G.A., and Seely, J.F., *Journal of Applied Physics* 68:3947-3952, 1990.

**Design of a Waveguide Resonator with Rippled Wall Reflectors for a 100 GHz CARM Oscillator Experiment**, by McCowan, R.B.\*, Fliflet, A.W., Gold, S.H., Granatstein, V.L.\*, and Wang, M.C.\*, *International Journal of Electronics* 65:463-475, 1988.

**Detection of Ground-State Atomic Hydrogen in a DC Plasma Using Third Harmonic Generation**, by Celii, F.G., Thorsheim, H.R., Butler, J.E., Plano, L.S.\*, and Pinneo, J.M.\*, *Journal of Applied Physics* 68:3814-3817, 1990.

**Effect of Line Opacity on Conditions for Radiative Collapse in a Krypton Z-Pinch**, by Apruzese, J.P. and Kepple, P.C., *AIP Conference Proceedings* 195:108-117, *Dense Z-Pinches*, American Institute of Physics, NY, 1989.

**Effects of Autoionizing Resonances of Density-Sensitive Spectral-Line Intensity Ratios in High-Temperature Plasmas**, by Jacobs, V.L., Hagelstein, P.L.\*, Chen, M.H.\*, Minner, R.\*, and Seely, J.F., *Physical Review A* 41:1041-1057, 1990.

**Electron Collision Shift of the Lyman- $\alpha$  Line of Ionized Helium**, by Blaha, M.\* and Davis, J., *Physical Review A* 41:6928-6934, 1990.

**Equilibrium and Stability of Free-Running, Phase-Locked, and Mode-Locked Quasi-Optical Gyrotrons**, by Manheimer, W.M., Levush, B.\*, and Antonsen, T.M.\*, *IEEE Transactions on Plasma Science* 18:350-368, 1990.

**Evolution of An X-Pinch Plasma**, by Cochran, F.L.\* and Davis, J., *Physics of Fluids* 132:1238-1246, 1990.

**Fe XV Line Ratios in the Sun: Discrepancies between Theory and Observation**, by Dufton, P.L.\*, Kingston, A.E.\*, and Widing, K.G., *Astrophysical Journal* 353:323-328, 1990.

**Foil Focusing of Electron Beams**, by Fernsler, R. F., Hubbard, R.F., and Slinker, S.P., *Journal of Applied Physics* 68:5985-5994, 1990.

**Fractal Boundaries in Magnetotail Particle Dynamics**, by Chen, J., Rexford, J.L., and Lee, Y. C.\*, *Geophysical Research Letters* 17:1049-1052, 1990.

**Frequency Shifts Induced in Laser Pulses by Plasma Waves**, by Esarey, E., Ting, A., and Sprangle, P., *Physical Review A* 42:3526-3531, 1990.

**A General Theory of Beam Breakup Instabilities in Linear Accelerators**, by Lau, Y.Y. and Colombant, D.G., *AIP Conference Proceedings* 193:244-273, *Advanced Accelerator Concepts*, American Institute of Physics, NY, 1989.

**High-Energy Electron Beam Deposition and Plasma Velocity Distribution in Partially Ionized N<sub>2</sub>**, by Slinker, S.P., Ali, A.W., and Taylor, R.D.\*, *Journal of Applied Physics* 67:679-690, 1990.

**Imploding Neon Puff Gas Plasmas. II.**, by Clark, R.W. and Davis, J., *Physics of Fluids* B2:1698-1705, *Physics of Fluids*, 1990.

**Improved Beam Confinement in the Modified Betatron with Strong Focusing**, by Kapetanacos, C.A., Len, L.K.\*, Smith, T., Golden, J.\*, Smith, K.\*, Marsh, S.J.\*, Dialetis, D.\*, Mathew, J., Loschialpo, P., and Chang, J.H., *Physical Review Letters* **64**:2374-2377, 1990.

**Initial Operation of a High-Power Quasi-Optical Gyrotron**, by Fliflet, A.W., Hargreaves, T.A., Manheimer, W.M., Fischer, R.P., and Barsanti, M.L.\*, *IEEE Transactions on Plasma Science* **18**:306-12, 1990.

**Ionization and Deionization of Electron Beam Disturbed Air**, by Ali, A.W., *Nonequilibrium Processes in Partially Ionized Gases*, Plenum Press, 1990, pp. 651-658.

**Laser Wakefield Acceleration and Relativistic Optical Guiding**, by Sprangle, P., Esarey, E., Ting, A., and Joyce, G., *AIP Conference Proceedings* **193**:376-387, *Advanced Accelerator Concepts*, American Institute of Physics, 1989.

**Magnetic Reconnection in Collisionless Plasmas: Prescribed Fields**, by Burkhart, G.R.\*, Drake, J.F.\*, and Chen, J., *Journal of Geophysical Research* **95**:18833-18848, 1990.

**Making K-Shell Radiation From Aluminum Foil Implosions**, by Whitney, K.G. and Thornhill, J.W., *AIP Conference Proceedings* **195**:143, *Dense Z-Pinches*, American Institute of Physics, NY, 1989.

**Measurements of Plasma-Neutralized Super Vacuum Currents in a Gyrotron Configuration**, by Kirkpatrick, D.A.\*, Gold, S.H., Manheimer, W.M., Black, W.M., Kinkead, A.K., Hardesty, D.L., Killian, K.W., and Sucy, M.\*, *Applied Physics Letters* **57**:437-439, 1990.

**Millimeter-Wave Gyrokystron Amplifier Experiment Using a Relativistic Electron Beam**, by Gold, S.H., Fliflet, A.W., Manheimer, W.M., Kirkpatrick, D.A., Black, W.M., Kinkead, A.K., Hardesty, D.L., and Sucy, M.S.\*, *IEEE Transactions on Plasma Science* **18**:1021-1027, 1990.

**Neutron Measurements on ZFX**, by Gerber, K.A. and Sethian, J.D., *Review of Scientific Instruments* **61**:3169-3171, 1990.

**A New Procedure for Analyzing X-Ray Spectra from Laboratory Plasmas**, by Coulter, M.C.\*, Whitney, K. G., and Thornhill, J.W., *Journal of Quantitative Spectroscopy and Radiative Transfer* **44**:443-456, 1990.

**Nonlinear Analysis of the Cerenkov Maser**, by Freund, H.P. and Ganguly, A.K., *Physics of Fluids B* **2**:2506-2515, 1990.

**Nonlinear Beam Loading and Dynamical Limiting Currents in a High-Power Microwave Gap**, by Colombant, D.G. and Lau, Y.Y., *Physical Review Letters* **64**:2320-2323, 1990.

**Nonlinear Development of the Sausage Instability**, by Colombant, D. and Mosher, D., *AIP Conference Proceedings* **195**:262-271, *Dense Z-Pinches*, American Institute of Physics, NY, 1989.

**Nonlinear Evolution of the Unmagnetized Ion Rayleigh-Taylor Instability**, by Hassam, A.B.\* and Huba, J.D., *Physics of Fluids B* **2**:2001-2006, 1990.

**The Nonlinear Interaction of Intense Laser Pulses in Plasmas**, by Sprangle, P., Esarey, E., and Ting, A., *Physical Review A* **41**:4463-4469, 1990.

**Nonlinear Theory of Intense Laser-Plasma Interactions**, by Sprangle, P., Esarey, E., and Ting, A., *Physical Review Letters* **64**:2011-2014, 1990.

**Nonlinear Wakefield Generation and Relativistic Focusing of Intense Laser Pulses in Plasmas**, by Ting, A., Esarey, E., and Sprangle, P., *Physics of Fluids B* **2**: 1390-1394, 1990.

**The NRL Frozen Deuterium Fiber Z-Pinch Experiment**, by Sethian, J.D., Robson, A.E., Gerber, K.A., and DeSilva, A.W.\*, *AIP Conference Proceedings* **195**:308-314, *Dense Z-Pinches*, American Institute of Physics, NY, 1989.

---

An \* identifies an author listed with an affiliation other than NRL.

**Operation Characteristics of a Continuous-Wave-Relevant Quasioptical Gyrotron with Variable Minor Separation**, by Fliflet, A.W., Hargreaves, T.A.\*, Manheimer, W.M., Fischer, R.P., Barsanti, M.L.\*, Levush, B.\*, and Antonsen, T.\*, *Physics of Fluids B* 2:1046-1056, 1990.

**Optical Guiding and Beat Wave Phase Velocity Control in the Plasma Beat Wave Accelerator**, by Esarey, E., Ting, A., and Sprangle, P., *AIP Conference Proceedings* 193:71-86, *Advanced Accelerator Concepts*, American Institute of Physics, NY, 1989.

**Phase Plane Analysis of a Bennett Pinch**, by Giuliani, J.L., *AIP Conference Proceedings* 195:124-133, *Dense Z-Pinches*, American Institute of Physics, NY, 1989.

**Plasma Erosion Opening Switch Development at NRL**, by Weber, B.V., Boller, J.R., Comisso, R.J., Goodrich, P.J.\*, Grossmann, J.M., Hinshelwood, D.D.\*, Kellogg, J.C., Mosher, D., Neri, J.M., and Ottinger, P.F., *7th IEEE Pulsed Power Conference*, IEEE, 1989, pp. 268-271.

**Post-Implosion Evolution of High-Current, Radiating Z-Pinches**, by Mosher, D., *AIP Conference Proceedings* 195:191-200, *Dense Z-Pinches*, American Institute of Physics, 1989.

**Problems in Line Broadening and Ionization Lowering**, by Davis, J. and Blaha, M.\*, *AIP Conference Proceedings* 206:177-192, *Atomic Processes in Plasmas*, American Institute of Physics, 1990.

**Progress in the Development of the NRL Modified Betatron Accelerator**, by Len, L.K.\*, Smith, T., Golden, J.\*, Smith, K.\*, Marsh, S.J.\*, Dialetis, D.\*, Mathew, J., Loschialpo, P., Chang, J.H., and Kapetanakis, C.A., *SPIE Proceedings* 1226:382-392, *Intense Microwave and Particle Beams*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Quantitative X-Ray Spectroscopy of Sodium Z-Pinch Plasmas for Na/Ne Photopumping**, by Burkhalter, P.G., Mehlman, G.\*, Apruzese, J.P., Newman, D.A.\*, Scherrer, V.E., Young, F.C., Stephanakis, S.J., and Hinshelwood, D.D.\*, *Journal of Quantitative Spectroscopy and Radiative Transfer* 44:495-507, 1990.

**A Quest for More Efficient X-Ray Lasers: Atomic Parameters Involved and Recent Experiments**, by Elton, R.C., McLean, E.A., Stamper, J.A., Manka, C.K., and Ripin, B.H., *AIP Conference Proceedings* 206:257-266, *Atomic Processes in Plasma*, American Institute of Physics, 1990.

**Radiation Hydrodynamics of Gas Puff Plasmas**, by Davis, J. and Clark, R., *AIP Conference Proceedings* 195:81-95, *Dense Z-Pinches*, American Institute of Physics, NY, 1989.

**Relativistic Klystron Amplifiers Driven by Modulated Intense Relativistic Electron Beams**, by Lau, Y.Y., Friedman, M., Krall, J., and Serlin, V., *IEEE Transactions on Plasma Science* 18:553-569, 1990.

**Review of Quasi-Optical Gyrotron Development**, by Fliflet, A.W., Hargreaves, T.A., Fischer, R.P., Manheimer, W.M., and Sprangle, P., *Journal of Fusion Energy* 9:31-58, 1990.

**Simulation of Short Intense Laser Pulse Propagation in the Laser Wakefield Accelerator**, by Ting, A., Sprangle, P., and Esarey, E., *AIP Conference Proceedings* 193:398-407, *Advanced Accelerator Concepts*, American Institute of Physics, NY, 1989.

**Stability of a Z-Pinch at the Pease Braginskii Current**, by Cochran, F.L.\* and Robson, A.E., *Physics of Fluids B* 2:2270-2272, 1990.

**Stability of a Z-Pinch with Rising Current**, by Cochran, F.L.\* and Robson, A.E., *AIP Conference Proceedings* 195:236-245, *Dense Z-Pinches*, American Institute of Physics, NY, 1989.



**Stability of Sub-Alfvenic Plasma Expansions**, by Huba, J.D., Hassam, A.B.\*, and Winske, D.\*, *Physics of Fluids B2*: 1676-1697, 1990.

**Theory and Conceptual Design of a High-Power Highly Efficient Magnicon at 10 and 20 GHz**, by Manheimer, W.M., *IEEE Transactions on Plasma Science* 18:632-645, 1990.

**The Theory of Final Focusing of Intense Light Ion Beams**, by Watrous, J.\*, Ottinger, P.F., and Mosher, D., *Physics of Fluids* 2B:378-389, 1990.

**Transition From  $I^4$  to  $I^2$  Scaling of K-Shell Emission in Aluminum Array Implosions**, by Thornhill, J.W., Whitney, K.G., and Davis, J., *Journal of Quantitative Spectroscopy and Radiative Transfer* 44:251-259, 1990.

**Transitions and Energy Levels for Cu-Like  $\text{Yb}^{41+}$ ,  $\text{Ta}^{44+}$ , and  $\text{U}^{63+}$** , by Kania, D.R.\*, MacGowan, B.J.\*, Keane, C.J., Brown, C.M., Ekberg, J.O., Seely, J.F., Feldman, U., and Reader, J.\*, *Journal of the Optical Society of America B* 7:1993-1996, 1990.

**Universal Interchange Instability in Partially Ionized Gases**, by Huba, J.D., *Physics of Fluids B* 2:2547-2550, 1990.

**X Rays from Z-Pinches on Relativistic Electron-Beam Generators**, by Pereira, N.R.\* and Davis, J., *Journal of Applied Physics* 64:R1-R27, 1988.

**ZFX-a 350 kJ, 2MA, Z-Pinch Driver**, by Sethian, J.D. and Robson, A.E., *IEEE Pulsed Power Conference*, IEEE, 1989, pp. 732-735.

## Radar

**95-GHz Short Pulse Radar**, by Uliana, E.A., Yapple, B.S., Chu, N.C.\*, and Newkirk, M.H.\*, *IEEE Transactions on Geoscience and Remote Sensing* 28:729-731, *IGARSS '89 12th Canadian Symposium on Remote Sensing*, 1990.

**Airborne MTI**, by Staudaher, F.M., *Radar Handbook*, 2nd ed., McGraw-Hill, NY, 1990, pp. 16.1-16.31.

**Angle Estimation in the Presence of Mainbeam Interference**, by Lin, F.L.C. and Kretschmer, F.F., *IEEE International Radar Conference*, IEEE, NY, 1990, pp. 444-450.

**False Alarm Control Using Doppler Estimation**, by Trunk, G.V., Gordon, W.B., and Cantrell, B.H., *IEEE Transactions on Aerospace and Electronic Systems* 26:146-153, *IEEE Transactions on Aerospace and Electronic Systems*, 1990.

**An Introduction to Radar**, by Skolnik, M.I., *Radar Handbook*, 2nd ed., McGraw-Hill, NY, 1990, pp. 1.1-1.21.

**Ka-Band Cross Sections Measured in a Wind-Wave Tank**, by Keller, M.R., Keller, W.C., and Gotwols, B.L.\*, *OCEANS '90, Conference Proceedings. Engineering in the Ocean Environment*, IEEE, NY, 1990, pp. 238-239.

**Long Term Integration Using a Phased Array Radar**, by Trunk, G.V., Wilson, J.D., and Hughes, P.K., *IEEE International Radar Conference*, IEEE, 1990, pp. 313-315.

**Measurements of EM Bias at Ku and C Bands**, by Melville, W.K.\*, Arnold, D.V.\*, Stewart, R.H.\*, Keller, W.C., Kong, J.A.\*, Jessup, A.T.\*, and Lamarre, E.\*, *Oceans '90, Conference Proceedings. Engineering in the Ocean Environment*, IEEE, NY, 1990, pp. 181-186.

**Nonlinear Modeling of Gated Range Tracker Dynamics with Application to Radar Range Resolution**, by Abed, E.H.\*, Goldberg, A.J., and Gover, R.E., *IEEE Conference on Decision and Control*, Vol. 4, IEEE, NY, 1990, pp. 2276-2282.

**Phased Array Radar Antennas**, by Cheston, T.C. and Frank, J.\*, *Radar Handbook*, 2nd ed., McGraw Hill, NY, 1990, pp. 7.1-7.82.

**Radar Backscatter Statistics from Water Waves**, by Gotwols, B.L.\* and Keller, W.C., *Oceans '90, Conference Proceedings. Engineering in the Ocean Environment*, IEEE, NY, 1990, pp. 240-242.

**Radar Handbook, Second Edition**, by Skolnik, M.I., ed., *Radar Handbook, 2nd ed.*, McGraw-Hill, NY, 1990, pp. 1-25.35.

**Selective Observation of Resonances via their Ringing in Transient Radar Scattering, as Illustrated for Conducting and Coated Spheres**, by Howell, W.E. and Uberall, H.E.\*, *IEEE Transactions on Antennas and Propagation* 38:293-298, 1990.

**Superresolution Techniques in the Range Domain**, by Gabriel, W.F., *IEEE International Radar Conference*, IEEE, 1990, pp. 263-267.

## Radiation Technology

**Depletion Region Geometry Analysis Applied to Single Event Sensitivity**, by Langworthy, J.B., *IEEE Transactions on Nuclear Science* 36:2427-2434, 1989.

**Radiation Effects in Space Systems**, by Ritter, J.C., *Naval Research Reviews* 42:2:25-37, 1990.

**Resistance of Holograms Made in Dichromated Gelatin Emulsion to Fission Neutron Damage**, by Golden, J.P., Summers, W.H., and Carter, W.H., *Applied Optics* 29:4343-4344, 1990.

## Solid State

**Accurate Forces in a Local-Density Approximation**, by Jackson, K. and Pederson, M.R., *Physical Review B* 42:3276-3281, 1990.

**Alternative Approach to Nanocomposite Synthesis by Sputtering**, by Chow, G.M., Holtz, R.L.\*, Pattnaik, A., Edelstein, A.S., Schlesinger, T.E.\*, and Cammarata, R.C.\*, *Applied Physics Letters* 56:1853-1855, 1990.

**Atomic Profiles and Electrical Characteristics of Very High Energy (8-20 MeV) Si Implants in GaAs**, by Thompson, P.E., Dietrich, H.B., and Eridon, J.M., *Journal of Applied Physics* 67:1262-1265, 1990.

**Band Edge Properties of Quasi-One-Dimensional HgTe-CdTe Heterostructures**, by Meyer, J.R., Bartoli, F.J., Hoffman, C.A., and Ram-Mohan, L.R.\*, *Physical Review Letters* 64:1963-1966, 1990.

**Calculated Elastic and Thermal Properties of MgO at High Pressures and Temperatures**, by Isaak, D.G.\*, Cohen, R.E., and Mehl, M.J., *Journal of Geophysical Research* 95:7055-7067, 1990.

**Calculations of Thermal Conductivity for Amorphous Si**, by Feldman, J.L., Broughton, J.Q., Allen, P.B.\*, and Wooten, F.\*, *20th International Conference on the Physics of Semiconductors, Vol. 3*, World Scientific, 1990, pp. 2075-2078.

**Chaos in Magnetostatic Modes in an Yttrium Iron Garnet Film between 2 and 4 GHz**, by Carroll, T.L.\*, Pecora, L.M., and Rachford, F.J., *Journal of Applied Physics* 67:5630-5632, 1990.

**Characterization of a Large Superconducting Split Pair Magnet for Swept Field Measurements**, by Crockett, A.G. and Kennedy, T.A., *Review of Scientific Instruments* 61:1753-1755, 1990.

**Characterization of Quantum-Confined CuCl Microcrystals in a Glassy Matrix**, by Ruller, J.A., Dutt, D.A., Williams, G.M., Friebele, E.J., Justus, B.L., and Campillo, A.J., *SPIE Proceedings* 1327:145-150, *Properties and Characterization of Optical Glass II*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Charge-Density-Wave Narrow-Band Noise in NbSe<sub>3</sub> at T<4K**, by Tritt, T.M., Gillespie, D.J., and Ehrlich, A.C., *Physical Review B* 41:7948-7951, 1990.

**The Color of Polarization in Cuprate Superconductors**, by Hoff, H.A., Osofsky, M.S., Lechter, W.L.\*, and Pande, C.S., NASA-CP-

3100:97-106, *Advances in Material Science and Applications of High Temperature Superconductors*, National Aeronautics and Space Administration, 1990.

**Comment on "Native Acceptor Levels in Ga-Rich GaAs"** [J. App. Phys. 65, 596 (1989)], by Moore, W.J. and Shanabrook, B.V., *Journal of Applied Physics* 67:7618-7619, 1990.

**Comparison Between Frequency Dependent Specific Heat and Dielectric Relaxation of Glycerol and Propylene Glycol**, by Ngai, K.L. and Rendell, R.W., *Physical Review B* 41:754-756, 1990.

**Correlation in Metallic Copper Oxide Superconductors. How Large is it?**, by Pickett, W.E., Krakauer, H.\*, Cohen, R.E., Singh, D., and Papaconstantopoulos, D.A., *Superconductivity and Applications*, Plenum Press, 1990, pp. 463-473.

**Correlation of Normal and Superconducting Properties and Unified Approach to the Description of High Tc Oxides**, by Kresin, V.Z.\* and Wolf, S.A., NASA-CP-3100:353-364, *Advances in Materials Science and Applications of High Temperature Superconductors*, National Aeronautics & Space Administration, 1990.

**Correlation of SIMOX Processing and Device Performance by Combined DLTS and Transistor Analysis**, by McLarty, P.K.\*, Mazhari, B.\*, Potamianos, C.N.\*, Christoloveanu, S.\*, Ioannou, D.E.\*, and Hughes, H.L., *1989 IEEE SOS/SOI Technology Conference*, IEEE, NY, 1989, pp. 31-32.

**Criteria for Validity of Rutherford Scatter Analyses**, by Butler, J.W., *Nuclear Instruments and Methods in Physics Research B* 45:160-165, 1990.

**Critical Temperature in High-Tc Layered Superconductors: Dependence on the Number of Interacting Conducting Layers Per Unit Cell**, by Jha, S.S.\* and Rajagopal, A.K., *Physica B and C* 168:173-184, 1990.

**Deposition of (100) Oriented MgO Thin Films on Sapphire by a Spray Pyrolysis Method**, by DeSisto, W.J. and Henry, R.L., *Applied Physics Letters* 56:2522-2523, 1990.

**Depth Profiles of Ag/Si(111) Thin-Film Interface Regions**, by Chambers, G.P. and Sartwell, B.D., *Surface and Interface Analyses* 15:126-134, 1990.

**Detection of Magnetic Resonance of Photoluminescence from a Si/Si<sub>1-x</sub>Ge<sub>x</sub> Strained Layer Superlattice**, by Glaser, E., Trombetta, J.M., Kennedy, T.A., Prokes, S.M., Glembocki, O.J., Wang, K.L.\*, and Chern, C.H.\*, *Physical Review Letters* 65:1247-1250, 1990.

**Diluted Magnetic Semiconductor Based Quantum-Well Structures with Magnetically Tuned Confinement**, by Liu, X.C.\*, Chou, W.C.\*, Petrou, A.\*, Warnock, J.\*, Jonker, B.T., Prinz, G.A., and Krebs, J.J., *20th International Conference on the Physics of Semiconductors, Vol. 1*, World Scientific, 1990, pp. 621-624.

**Dislocation Structures in Extruded FeAl**, by Feng, C.R. and Sadananda, K., *Scripta Metallurgica et Materiala* 24:2107-2112, 1990.

**Donor Levels and Impurity-Atom Relaxation in Nitrogen and Phosphorous Doped Diamond**, by Jackson, K. and Pederson, M.R., *Physical Review B* 41:12641-12649, 1990.

**Double Crystal X-Ray Analysis of Strain Distribution in Rapid Thermal Annealed, S-Implanted GaAs**, by Fatemi, M., Thompson, P.E., Chaudhuri, J.\*, and Shah, S.\*, *Journal of Applied Physics* 68:3964-3969, 1990.

**Dual Implants in InGaAs**, by Rao, M.V.\*, Moore, F., and Dietrich, H.B., *Journal of Applied Physics* 68:3763-3765, 1990.

**Dynamic Bulk Modules of Various Elastomers**, by Burns, J.\*, Dubbelday, P.S., and Ting, R.Y., *Journal of Polymer Science, Part B: Polymer Physics* 28:1187-1205, 1990.

**Effect of Heating and Rapidly Quenching NbSe<sub>3</sub> Crystals**, by Fuller, W.W., Tritt, T.M., Hoff, H.A., and Zettl, A.\*, *Physical Review B* 41:1671-1672, 1990.

**Effect of Magnetic Field Annealing on Magnetic Properties and Local Atomic Structure of Sputtered Amorphous TM<sub>80</sub>M<sub>20</sub> Films**, by Harris, V.G.\*, Oliver, S.A.\*, Nowak, W.B.\*, Vittoria, C.\*, Elam, W.T., and Culbertson, R.J.\*, *International Magnetic Conference, Digest of INTERMAG '90*, IEEE, NY, 1990, pp. AQ-05.

**Effect of Surface Reconstruction on Stability and Reactivity of Si Clusters**, by Kaxiras, E.\*, *Physical Review Letters* 64:551-554, 1990.

**The Effects of Ion-Implanted Reactive Elements on the Mechanisms of Oxidation and Hot Corrosion of MCrAlY-Type Coatings**, by Provenzano, V., *Surface Modification Technologies III*, 1990, pp. 599-631.

**The Effects of Metal Doping: YBa<sub>2</sub>(Cu<sub>1-x</sub>M<sub>x</sub>)<sub>3</sub>O<sub>7-δ</sub> (M=Fe, Co, Ni, and Zn)**, by Yang, C.Y.\*, Moodenbaugh, A.R.\*, Wang, Y.L.\*, Xu, Y.\*, and Heald, S.M.\*, *MRS Symposium Proceedings* 169:225-228, *High Temperature Superconductors: Fundamental Properties and Novel Materials Processing*, Materials Research Society, Pittsburgh, PA, 1990.

**The Effects of Scattering on Current-Voltage Characteristics, Transient Response, and Particle Trajectories in the Numerical Simulation of Resonant Tunneling Diodes**, by Jensen, K.L. and Buot, F.A., *Journal of Applied Physics* 67:7602-7607, 1990.

**The Effects of UV Laser Irradiation on the Filament-Assisted Deposition of Diamond**, by Celii, F.G.\*, Nelson, H.H., and Pehrsson, P.E., *Journal of Materials Research* 5:2337-2344, 1990.

**Electrical and Optical Characterization of InSb Grown on GaAs by MBE**, by Thompson, P.E., Waterman, J., Gaskill, D.K., Stahlbush, R., Gammon, D., and Davis, J.L., *MRS Symposium Proceedings* 160:685-690, *Layered Structures - Heteroepitaxy, Superlattices, Strain, and Meta-*

*stability*, Materials Research Society, Pittsburgh, PA, 1990.

**Electron Spin Resonance Determination of the Redox State of Iron and its Relationship to Radiation-Induced Defect Centers in Oxidized and Reduced ZrF<sub>4</sub>-Based Glasses**, by Griscom, D.L. and Ginther, R.J.\*, *Journal of Non-Crystalline Solids* 113:146-160, 1989.

**Electron Transport and Cyclotron Resonance in [211]-Oriented HgTe-CdTe Superlattices**, by Hoffman, C.A., Meyer, J.R., Wagner, R.J., Bartoli, F.J., Chu, X.\*, Faurie, J.P.\*, Ram-Mohan, L.R.\*, and Xie, H.\*, *Journal of Vacuum Science and Technology A* 8:1200-1205, 1990.

**Electron-LO-phonon Scattering Rates in Semiconductor Quantum Wells**, by Rudin, S.\* and Reinecke, T.L., *Physical Review B* 41:7713-7717, 1990.

**Electronic Structure and Defects in a Si/Si<sub>1-x</sub>Ge<sub>x</sub> Superlattices from Magnetic Resonance Detected on Photoluminescence**, by Glaser, E., Trombetta, J.M., Kennedy, T.A., Prokes, S.M., Glembocki, O.J., Wang, K.L.\*, and Chern, C.H.\*, *20th International Conference on the Physics of Semiconductors*, Vol. 2, World Scientific, 1990, pp. 885-888.

**Electronic Structure and Total Energy Calculations for Oxide Perovskites and Superconductors**, by Cohen, R.E., Boyer, L.L., Mehl, M.J., Pickett, W.E., and Krakauer, H.\*, *Chapman Conference on Perovskites*, American Geophysical Union, 1989, pp. 55-66.

**Electronic Structure of an Ideal Diamond-Nickel (001) Interface**, by Pickett, W.E. and Erwin, S.C., *Physical Review B* 41:9756-9765, 1990.

**Electronic Structure Studies of Diamond/Metal Interfaces**, by Erwin, S.C. and Pickett, W.E., *MRS Symposium Proceedings* 193:59-64, *Atomic Scale Calculations of Structure in Materials*, Materials Research Society, Pittsburgh, PA, 1990.

**An Embedded-Atom Method Study of Diffusion of an Ag Adatom on (111) Ag**, by Rilling, W.K.\*, Gilmore, C.M.\*, Andreadis, T.D., and Sprague, J.A., *Canadian Journal of Physics* **68**:1035-1040, *Kinetics of Nonlinear Dynamics*, 1990.

**Energetics and Geometries for Hydrocarbon Radicals on the Diamond Surface**, by Pederson, M.R., Jackson, K.A., and Pickett, W.E., *20th International Conference on the Physics of Semiconductors*, Vol. 1, World Scientific, 1990, pp. 328-331.

**Enhanced Magnetic Anisotropy at the Percolation Threshold of Fe-SiO<sub>2</sub> Composite Thin Films**, by Holtz, R.L.\*, Lubitz, P., and Edelstein, A.S., *Applied Physics Letters* **56**:943-945, 1990.

**Epitaxy of Ni on Si(111) by Ion Beam Assisted Deposition**, by Grabowski, K.S. and Kant, R.A., *MRS Symposium Proceedings* **187**:237-242, *Thin Film Structures and Phase Stability*, Materials Research Society, 1990.

**Equilibrium Properties of Zinc**, by Singh, D. and Papaconstantopoulos, D.A., *Physical Review B* **42**:8885-8889, 1990.

**An Error Measure for Dose Correction in e-Beam Nanolithography**, by Pati, Y.C., Teolis, A., Park, D., Bass, R., Rhee, K., Bradie, B.\*, and Peckerar, M.C., *Journal of Vacuum Science and Technology B* **8**:1882-1888, 1990.

**Exchange and Correlation Effects in Spin Density Excitation Spectra of the Electron Gas in GaAs/AlGaAs Quantum Well Structures**, by Gammon, D., Shanabrook, B.V., Ryan, J.C., and Katzer, D.S., *20th International Conference on the Physics of Semiconductors*, Vol. 2, World Scientific, 1990, pp. 1469-1472.

**Extended X-Ray Absorption Fine Structure Study of Potassium Niobate**, by Kim, K.H., Elam, W.T., and Skelton, E.F., *MRS Symposium Proceedings* **172**:291-294, *Optical Fiber Materials and Processing*, Materials Research Society, Pittsburgh, PA, 1990.

**The Fabrication and Magnetic Shielding Properties of Melt Cast Bi-Sr-Ca-Cu-O**, by Rayne, R.J., Toth, L.E., Bender, B.A., Lawrence, S.H., Soulen, R.J., Miller, M.M., and Candella, G., *MRS Symposium Proceedings* **169**:1279-1282, *High-Temperature Superconductors: Fundamental Properties*, Materials Research Society, Pittsburgh, PA, 1990.

**Fast Charge Collection in GaAs MESFETs**, by McMorrow, D.P., Knudson, A.R., and Campbell, A.B., *IEEE Transactions on Nuclear Science* **37**:1902-1908, *Nuclear and Space Radiation Effects Conference*, 1990.

**Fe Mossbauer Effect in Y<sub>x</sub>Pr<sub>1-x</sub>Ba<sub>2</sub>(Cu<sub>0.98</sub>Fe<sub>0.02</sub>)<sub>3</sub>O<sub>7</sub>**, by Rubinstein, M., Swartzendruber, L.J.\*, Bennett, L.H.\*, Ritter, J.J.\*, and Atzmony, U.\*, *Journal of Applied Physics* **67**:5029-5031, 1990.

**First-Principles Supercell Studies of the Nitrogen Impurity in Diamond**, by Erwin, S.C. and Pickett, W.E., *Physical Review B* **42**:11056-11062, 1990.

**First-Principles, General-Potential Local Orbital Calculations for Bulk Crystals**, by Erwin, S.C., Pederson, M.R., and Pickett, W.E., *Physical Review B* **41**:10437-10446, 1990.

**Forces and Geometry Optimization in First-Principles Atomic Cluster Calculations**, by Jackson, K., Pederson, M.R., and Erwin, S.C., *MRS Symposium Proceedings* **193**:107-112, *Atomic Scale Calculations of Structure in Materials*, Materials Research Society, Pittsburgh, PA, 1990.

**Fracture-EXAFS: A New Method for the Study of Interfaces in Thin Films and Polycrystalline Materials**, by Barrera, E.V.\*, Maruyama, B., and Heald, S.M.\*, *MRS Symposium Proceedings* **188**:275-280, *Thin Films: Stresses and Mechanical Properties II*, Materials Research Society, Pittsburgh, PA, 1990.

**Fundamentals of Ion-Beam-Assisted Deposition. I Model of Process and Reproducibility of Film Composition**, by Van Vechten, D., Hubler, G.K., Donovan, E.P., and Correll, F.D.\*, *Journal of Vacuum Science and Technology* **A8**:821-830, 1990.

**Fundamentals of Ion Beam Assisted Deposition II: Absolute Calibration of Ion and Evaporant Fluxes**, by Hubler, G.K., Van Vechten, D., Donovan, E.P., and Carosella, C.A., *Journal of Vacuum Science and Technology* **A8**:831-839, 1990.

**GaAs Tight Binding Hamiltonians**, by Broughton, J., Papaconstantopoulos, D.A., Pederson, M., and Singh, D., *20th International Conference on the Physics of Semiconductors*, Vol. 3, World Scientific, 1990, pp. 1171-1174.

**GaAs Total Energy Tight Binding Hamiltonians for Use in Molecular Dynamics**, by Broughton, J., Pederson, M., Papaconstantopoulos, D.A., and Singh, D., *MRS Symposium Proceedings* **193**:219-234, *Atomic Scale Calculations of Structure in Materials*, Materials Research Society, Pittsburgh, PA, 1990.

**Gradient-Corrected Local Density Studies of Group W Superconductors**, by Singh, D. and Pickett, W.E., *20th International Conference on the Physics of Semiconductors*, Vol. 3, World Scientific, 1990, pp. 1787-1790.

**Growth and Characterization of InSb/GaAs Grown Using Molecular Beam Epitaxy**, by Davis, J.L., Thompson, P.E., and Wagner, R.J., *Semiconductor Science and Technology* **5**:5225-5228, 1990.

**Growth and Characterization of  $\text{La}_{2-x}\text{Sr}_x\text{CuO}_y$  and  $\text{Bi}_{2-x}\text{Sr}_{2-x}\text{CuO}_y$  Crystals**, by Osofsky, M.S., Cohn, J.L., Lechter, W.L.\*, Skelton, E.F., Qadri, S.B., Hoff, H.A., and Browning, V.M., *MRS Symposium Proceedings* **169**:69-72, *High-Temperature Superconductors: Fundamental Properties and Novel Materials Processing*, Materials Research Society, Pittsburgh, PA, 1990.

**Growth and Decay Kinetics of Defect Centers in High-Purity Fused Silicas Irradiated at 77K with X-Rays or 6.4-eV Laser Light**, by Griscom, D.L., *Nuclear Instruments and Methods in Physics Research* **B46**:12-17, *Proceedings of the 5th International Conference on Radiation Effects in Insulators*, 1990.

**Growth by Molecular Beam Epitaxy of Indium Antimonide on Cleaved and on Polished Barium Fluoride**, by Davis, J.L., *Thin Solid Films* **192**:111-119, 1990.

**Growth of Oxide Layers on Gallium Arsenide with a High Kinetic Energy Atomic Oxygen Beam**, by Hoffbauer, M.A.\*, Cross, J.B.\*, and Bermudez, V.M., *Applied Physics Letters* **57**:2193-2195, 1990.

**Growth, Polishing, and Optical Scatter of Diamond Thin Films**, by Thorpe, T.P., Morrish, A.A., Hanssen, L.M., Butler, J.E., and Snail, K.A., *SPIE Proceedings* **1325**:230-237, *Diamond Optics (III)*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**HgTe-CdTe Multiple Quantum Wells**, by Hoffman, C.A., Arnold, D.J., Meyer, J.R., Bartoli, F.J., Lansari, Y.\*, Cook, J.W.\*, Schetzina, J.F.\*, and Schulman, J.N.\*, *MRS Symposium Proceedings* **161**:413-418, *Properties of II-VI Semiconductors: Bulk Crystals, Epitaxial Films, Quantum Well Structures, and Dilute Magnetic Systems*, Materials Research Society, 1990.

**A High Pressure Phase Transition of Corundum Predicted by the Potential Induced Breathing Model**, by Cynn, H.\*, Isaak, D.G.\*, Cohen, R.E., Nicol, M.F.\*, and Anderson, O.L.\*, *American Mineralogist* **75**:439-442, 1990.

**High Resolution Measurement of Surface Misorientation in Single Crystal Wafers**, by Fatemi, M., **33**:83-90, *Advances in X-Ray Analysis*, 1990.

**High Temperature Superconductivity Space Experiment (HTSSE): Passive Millimeter Wave Devices**, by Nisenoff, M., Gubser, D.U., Wolf, S.A., Ritter, J.C., and Price, G., *SPIE Proceedings* **139**:104-113, *Progress in High-Temperature Superconducting Transistors and Other Devices*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**A High-Resolution  $^{29}\text{Si}$  and  $^{27}\text{Al}$  NMR Study of Alkaline Earth Aluminosilicate Glasses**, by Merzbacher, C.I., Sherriff, B.L., Hartman, J.S.\*, and White, W.B.\*, *Journal of Non-Crystalline Solids* **124**:194-206, 1990.

**Higher Order Electron Cyclotron Resonance in n-Type HgTe-CdTe Superlattices**, by Dobrowolska, M.\*, Wojtowicz, T.\*, Furdyna, J.K.\*, and Meyer, J.R., *Applied Physics Letters* **57**:1781-1783, 1990.

**Identification of the Mn Structure in Mn/Ag(001) Superlattices**, by Idzerda, Y.U., Jonker, B.T., Elam, W.T., and Prinz, G.A., *Journal of Applied Physics* **67**:5385-5387, 1990.

**Impurity Localized Plasmons in Semiconductor Quantum Wells**, by Rudin, S.\* and Reinecke, T.L., *20th International Conference on the Physics of Semiconductors*, Vol. 2, World Scientific, 1990, pp. 1349-1352.

**Indicator of High Temperature Superconductivity as an Aid to Processing**, by Hoff, H.A., *Materials and Manufacturing Processes* **5**:397-410, 1990.

**The Influence of Ion Bombardment on Reactions Between Ti and Gaseous  $\text{N}_2$** , by Kant, R.A. and Sartwell, B.D., *Journal of Vacuum Science and Technology A* **8**:861-867, 1990.

**Influence of  $\gamma$  Irradiation on ESR Active Defects in SIMOX Structures**, by Stesmans, A.\*, Revesz, A.G.\*, and Hughes, H.L., *IEEE SOS/SOI Technology Conference*, IEEE, NY, 1990, pp. 162-163.

**The Influence of Target-Substrate Bias on Pulsed Laser Deposited  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$** , by Chrisey, D.B., Horwitz, J.S., Grabowski, K.S., Reeves, M.E., Osofsky, M.S., and Gossett, C.R., *MRS Symposium Proceedings* **169**:435-438, *High-Temperature Superconductors: Fundamental Properties and Novel Materials Processing*, Materials Research Society, Pittsburgh, PA, 1990.

**Infrared Study of High Pressure and High Temperature of Coadsorption of CO and  $\text{H}_2$  on Clean and on Carbided Ni(100)**, by Glass, A.S. and Bermudez, V.M., *Journal of Vacuum Science and Technology A* **8**:2622-2626, 1990.

**InP JFET Equivalent Circuit and Negative Resistance Effects**, by Kruppa, W.\* and Boos, J.B., *SPIE Proceedings* **1144**:640-645, *First International Conference on Indium Phosphide and Related Materials for Advanced Electronic and Optical Devices*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1989.

**Interdiffusion Measurements in Asymmetrically Strained SiGe/Si Superlattices**, by Prokes, S.M. and Wang, K.L.\*, *Applied Physics Letters* **56**:2628-2630, 1990.

**Interfaces in GaAs/AlAs Quantum Well Structures**, by Gammon, D.G., Shanabrook, B.V., and Katzer, D.S., *Applied Physics Letters* **57**:2710-2712, 1990.

**Intra- and Intergranular Fracture of Diamond Thin Films**, by Hoff, H.A., Morrish, A.A., Carrington, W.A.\*, Butler, J.E., and Rath, B.B., *MRS Symposium Proceedings* **162**:279-284, *Diamond, Boron Nitride, Silicon Carbide and Related Wide Bandgap Semiconductors*, Materials Research Society, 1990.

**Investigation of the Structure and Stability of the Pt/SiC (001) Interface**, by Bermudez, V.M. and Kaplan, R., *Journal of Materials Research* **5**:2882-2893, 1990.

---

An \* identifies an author listed with an affiliation other than NRL.

**Laser-Annealed Refractory Metal Silicide Films on GaAs**, by Anderson, W.T., Christou, A., Thompson, P.E., Gossett, C.R., Eridon, J.M., Hatzopoulos, Z.\*, Efthimiopoulos, T.\*, Kudumas, M.\*, Michelakis, C.\*, and Morgan, D.V.\*, *Electronics Letters* **26**:62-64, 1990.

**Lattice Dynamics and Origin of Ferroelectricity in BaTiO<sub>3</sub>: Linearized Augmented-Plane-Wave Total-Energy Calculations**, by Cohen, R.E. and Krakauer, H.\*, *Physical Review B* **42**:6416-6423, 1990.

**Lattice Parameter and Nearest-Neighbor Distances in Zn<sub>1-x</sub>Fe<sub>x</sub>Se (0 ≤ x ≤ 0.22)**, by Qadri, S.B., Kim, K.H., Skelton, E.F., and Furdyna, J.K.\*, *Journal of Applied Physics* **67**:2156-2157, 1990.

**Lattice Weyl-Wigner Formulation of Exact Many-Body Quantum-Transport Theory and Applications to Novel Solid-State Quantum-Based Devices**, by Buot, F.A. and Jensen, K.L., *Physical Review B* **42**:9429-9457, *Workshop on Computational Electronics*, 1990.

**Light-Activated Two-Level Resistance Switching: An Extremely Sensitive GaAs/AlGaAs Solid-State Photon Counter**, by Snow, E.S., Campbell, P.M., Glembocki, O.J., Moore, W.J., and Kirchoefer, S.W., *Applied Physics Letters* **56**:117-119, 1990.

**Limitations to Fully-Depleted SOI Structures**, by Lawrence, R.K.\*, Campisi, G.J., Shontz, G.J.\*, Pollack, G.\*, and Sundaresan, R.\*, *IEEE SOS/SOI Technology Conference*, IEEE, NY, 1990, pp. 101-102.

**Line Tension of Extended Double Kinks in Thin Films**, by Twigg, M.E., *Journal of Applied Physics* **68**:5109-5114, 1990.

**Line-Narrowing Approaches to Solid State NMR Imaging**, by Miller, J.B., Cory, D.G., and Garraway, A.N., *Bulletin of Magnetic Resonance* **11**:197-202, 1990.

**Line-Narrowing Approaches to Solid State NMR Imaging: Pulsed Gradients and Second Averaging**, by Miller, J.B., Cory, D.G., and Garraway, A.N., *Philosophical Transactions of the Royal Society of London A* **333**:413-426, 1990.

**Linear Combination of Gaussian-Type Orbitals - Local-Density-Functional Cluster Studies of D-D Interactions of Titanium and Palladium**, by Dunlap, B.I., Brenner, D.W., Mowery, R.C., Mintmire, J.W., and White, C.T., *Physical Review B* **41**:9683-9687, 1990.

**Lithographic Studies of an E-Beam Resist in a Vacuum Scanning Tunneling Microscope**, by Marrian, C.R.K., Dobisz, C.R.K., and Colton, R.J., *Journal of Vacuum Science and Technology A* **8**:3563-3569, 1990.

**LO-Phonon-Assisted Emission Edge of Free Excitons in GaAs and GaAs/Ga<sub>x</sub>Al<sub>1-x</sub>As Quantum Wells**, by Shanabrook, B.V., Rudin, S.\*, Reinecke, T.L., Tseng, W., and Newman, P.\*, *Physical Review B* **41**:1577-1580, 1990.

**Low Energy Electron Diffraction; Auger and Energy Loss Spectroscopic Study of the Initial Stages of Growth by Molecular Beam Epitaxy of GaAs on Si(211) Substrates**, by Fotiadis, L. and Kaplan, R., *Thin Film Solids* **184**:415-422, 1990.

**Low Voltage Electron Beam Lithography with a Scanning Tunnelling Microscope**, by Marrian, C.R. and Colton, R.J., *Applied Physics Letters* **56**:755-757, 1990.

**Magnetic Anisotropy Measurements on Ni-Zn Ferrite Thin Films**, by Williams, C.M., Lubitz, P., Roh, J.D., Abe, M.\*, and Itoh, T.\*, *International Magnetism Conference, Digests of INTERMAG '90*, IEEE, NY, 1990, pp. AR-07.

**Magnetic Phase Diagrams for High Transition Temperature Superconductors**, by Soulen, R.J. and Wolf, S.A., *Physica C* **166**:95-99, 1990.

**Magneto-Optical Properties of HgTe-CdTe Superlattices**, by Meyer, J.R., Wagner, R.J., Bartoli, F.J., Hoffman, C.A., Dobrowolska, M.\*, Wojtowicz, T.\*, Furdyna, J.K.\*, and Ram-Mohar, L.R.\*, *Physical Review B* **42**:9050-9062, 1990.



**Magneto-Optical Resonances in HgTe-CdTe Superlattices**, by Meyer, J.R., Bartoli, F.J., Hoffman, C.A., Dobrowolska, M.\*, Wojtowicz, T.\*, Furdyna, J.K.\*, and Ram Mohan, L.R.\*, *20th International Conference on the Physics of Semiconductors, Vol. 2*, World Scientific, 1990, pp. 1170-1173.

**Magnetotransport Study of Fe-Cr-Fe Sandwiches Grown on ZnSe(100)**, by Chaiken, A., Prinz, G.A., and Krebs, J.J., *Journal of Applied Physics* **67**:4892-4894, 1990.

**Major Normal and Superconducting Parameters of High-Tc Oxides**, by Kresin, V.Z.\* and Wolf, S.A., *Physical Review B* **41**:4278-4285, 1990.

**Measurements of the Normal-Incidence X-Ray Reflectance of a Molybdenum-Silicon Multilayer Deposited on a 20001/mm Grating**, by Cruddace, R. G., Barbee, T.W.\*, Rife, J.C., and Hunter, W.R.\*, *Physical Scripta* **41**:396-399, 1990.

**Mechanical Properties of Multilayered Copper-Nickel Thin Films Measured by Indentation Techniques**, by Schlesinger, T.E.\*, Cammarata, R.C.\*, Kim, C., Qadri, S.B., and Edelstein, A.S., *MRS Symposium Proceedings* **188**:295-300, *Thin Films: Stresses and Mechanical Properties II*, Materials Research Society, Pittsburgh, PA, 1990.

**Mechanical Properties of Nanocomposite Coatings Fabricated by Sputtering**, by Chow, G.M., Holtz, R.L.\*, Wu, C.C., Edelstein, A.S., Schlesinger, T.E.\*, and Cammarata, R.C.\*, *MRS Symposium Proceedings* **188**:331-335, *Thin Films: Stresses and Mechanical Properties II*, Materials Research Society, Pittsburgh, PA, 1990.

**The Mechanism of Epitaxial Si-Ge/Si Heterostructure Formation by Wet Oxidation of Amorphous Si-Ge Thin Films**, by Prokes, S.M. and Rai, A.K.\*, *Journal of Applied Physics* **67**:807-813, 1990.

**The Mechanism of Epitaxial Si-Ge/Si Heterostructure Formation by Wet Oxida-**

**tion of Amorphous Si-Ge Thin Films**, by Prokes, S.M., Rai, A.K.\*, and Carlos, W.E., *MRS Symposium Proceedings* **160**:341-346, *Layered Structures - Heteroepitaxy, Superlattices, Strain, and Metastability*, Materials Research Society, Pittsburgh, PA, 1990.

**Metallization Pressure for NaCl in the B2 Structure**, by Feldman, J.L., Klein, B.M., Mehl, M.J., and Krakauer, H.\*, *Physical Review B* **42**:2752-2760, 1990.

**MeV Be Implantation in GaAs**, by Rao, M.V.\*, Thompson, P.E., Dietrich, H.B., and Simons, D.S.\*, *Journal of Applied Physics* **67**:6165-6170, 1990.

**Microstructure Property Relationships for High Tc Superconductors**, by Pande, C.S. and Hoff, H.A., *NATO ASI Series E* **181**:163-187, *Physics and Materials Science of High Temperature Superconductors*, Kluwer Academic, Boston, MA, 1990.

**Microwave Detected Optical Response of YBa<sub>2</sub>Cu<sub>3</sub>O<sub>7-x</sub> Thin Films**, by Kaplan, R., Carlos, W.E., Cukauskas, E.J., and Ryu, J.\*, *Journal of Applied Physics* **67**:4212-4216, 1990.

**Modification of the Piezoelectric Fields in Quantum Wells**, by Shanabrook, B.V., Gammon, D.G., Beresford, R.\*, Wang, W.I.\*, Leavitt, R.P.\*, and Broido, D.A.\*, *20th International Conference on the Physics of Semiconductors, Vol. 2*, World Scientific, 1990, pp. 901-904.

**Modulation Spectroscopy of Layered Structures**, by Glembocki, O.J., *MRS Symposium Proceedings* **160**:631-642, *Layered Structures - Heteroepitaxy, Superlattices, Strain, and Metastability*, Materials Research Society, Pittsburgh, PA, 1990.

**Modulation Spectroscopy of Semiconductor Materials, Interfaces and Microstructures: An Overview**, by Glembocki, O.J., *SPIE Proceedings* **1286**:2-30, *International Conference on Modulation Spectroscopy*, Society of Photo-optical and Instrumentation Engineers, Bellingham, WA, 1990.

**Mossbauer Study of  $^{57}\text{Fe}$  Single-Crystal Films Grown on (110) GaAs by MBE**, by Volkening, F.A.\*, Jonker, B.T., Prinz, G.A., and Koon, N.C., *Journal of Applied Physics* **67**:5646-5648, 1990.

**Multiple-Pulse Methods of  $^1\text{H}$  NMR Imaging of Solids. Second Averaging**, by Cory, D.G., Miller, J.B., Turner, R.\*, and Garroway, A.N., *Molecular Physics* **70**:331-345, 1990.

**Narrow Gap II-VI Superlattices. Correlation of Theory with Experiment**, by Meyer, J.R., Hoffman, C.A., and Bartoli, F., *Semiconductor Science and Technology* **5**:590-599, 1990.

**New Deep Acceptor in Epitaxial Cubic SiC**, by Freitas, J.A.\* and Bishop, S.G., *Applied Physics Letters* **55**:2757-2759, 1989.

**Nitrogen and Phosphorus Impurities in Diamond**, by Jackson, K., Pederson, M.R., and Harrison, J.G.\*, *MRS Symposium Proceedings* **163**:89-92, *Impurities, Defects and Diffusion in Semiconductors: Bulk and Layered Structures*, Materials Research Society, Pittsburgh, PA, 1990.

**NMR Imaging of Solids with a Surface Coil**, by Miller, J.B. and Garroway, A.N., *Review of Progress in Quantitative Nondestructive Evaluation*, Vol. 9, Plenum Press, NY, 1990, pp. 609-615.

**Nonequilibrium Carrier Dynamics in GaAs Semiconductors Induced by Energetic Ions**, by McMorro, D.P., Knudson, A.R., and Campbell, A.B., *Springer Series in Chemical Physics*, 53:300-302, *Ultrafast Phenomena VII*, 1990.

**Nonlinear and Linear Optical Properties of  $\text{Bi}_{1-x}\text{Sb}_x$** , by Youngdale, E.R., Meyer, J.R., Hoffman, C.A., Bartoli, F.J., Partin, D.L.\*, Thrush, C.M.\*, and Heremans, J.P.\*, *20th International Conference on Physics of Semiconductors*, Vol. 3, World Scientific, 1990, pp. 1863-1866.

**Nonlinear Optical Coefficients of Narrow-Gap Semiconductors**, by Youngdale, E.R., Hoffman, C.A., Meyer, J.R., Bartoli, F.J., Han, J.W.\*, Cook, J.W.\*, Schetzina, J.F.\*, Engelhardt, M.A.\*, Niles, E.W.\*, and Hochst, H.\*, *Journal of Vacuum Science and Technology A* **8**:1215-1220, 1990.

**The Nucleation and Growth of Germanium on (IT02) Sapphire Deposited by Molecular Beam Epitaxy**, by Godbey, D.J. and Twigg, M.E., *MRS Symposium Proceedings* **160**:505-511, *Layered Structures - Heteroepitaxy, Superlattices, Strain, and Metastability*, Materials Research Society, Pittsburgh, PA, 1990.

**Numerical Aspects on the Simulation of I-V Characteristics and Switching Times of Resonant Tunneling Diodes**, by Jensen, K.L. and Buot, F.A., *Journal of Applied Physics* **67**:2153-2155, 1990.

**Observation of Magnetic Resonance Modes of Fe Layers Coupled Via Intervening Cr**, by Krebs, J.J., Lubitz, P., Chaiken, A., and Prinz, G.A., *Journal of Applied Physics* **67**:5920-5924, *34th Annual Conference on Magnetism and Magnetic Materials*, 1990.

**Occupation of Quantum States Determined by Energy Storage in Superlattice Quantum State Transfer Devices**, by Kirchoefer, S.W., *Applied Physics Letters* **57**:1143-1145, 1990.

**ODMR of Shallow Donors in Zn-Doped LEC-Grown InP**, by Trombetta, J.M. and Kennedy, T.A., *MRS Symposium Proceedings* **163**:33-38, *Impurities, Defects, and Diffusion in Semiconductors: Bulk and Layered Structures*, Materials Research Society, Pittsburgh, PA, 1990.

**On the Electrochemical Etching of Tips for Scanning Tunneling Microscopy**, by Ibe, J.P.\*, Bey, P.P., Brandow, S.L., Brizzolara, R.A., Burnham, N.A., DiLella, D.P., Lee, K.P.\*, Marrian, C.R.K., and Colton, R.J., *Journal of Vacuum Science and Technology A* **8**:3570-3575, 1990.

**On the Interactions of Dislocation with Planar Free Surfaces**, by Louat, N.P.\* and Sadananda, K., *Journal of Applied Physics* **68**:526-530, 1990.

**On the Possibility of Si(100) by Adsorption of Group-VII Atoms**, by Kaxiras, E., *MRS Symposium Proceedings* **193**:143-148, *Atomic Scale Calculations of Structure in Materials*, Materials Research Society, Pittsburgh, PA, 1990.

**On the Quantum Theory of Electron Transport in the Wigner Formalism**, by Buot, F.A., *Journal of Applied Physics* **68**:3418-3424, 1990.

**Optical Absorption and Electron Paramagnetic Resonance Studies of Chemically Reduced Congruent Lithium Niobate**, by Dutt, D.A., Feigl, F.J.\*, and DeLeo, G.G.\*, *Journal of the Physics and Chemistry of Solids* **51**:407-415, 1990.

**Optical and Electron Microanalysis of Cuprate Superconductors**, by Hoff, H.A., Osofsky, M.S., Lechter, W.L.\*, Toth, L.E., Richards, L.E., and Pande, C.S., *High Temperature Superconductivity Compounds II*, The Minerals, Metals and Materials Society, 1990, pp. 407-419.

**Optically Detected Magnetic Resonance of Cubic SiC Grown by Chemical Vapor Deposition on Si**, by Kennedy, T.A., Freitas, J.A.\*, and Bishop, S.G., *Journal of Applied Physics* **68**:6170-6173, 1990.

**Optically Detected Magnetic Resonance of Group IV and Group VI Donors in  $\text{Al}_{0.6}\text{Ga}_{0.4}\text{As}/\text{GaAs}$  Heterostructures**, by Glaser, E., Kennedy, T.A., Molnar, B., and Mizuta, M.\*, *MRS Symposium Proceedings* **163**:753-758, *Impurities, Defects and Diffusion in Semiconductors: Bulk and Layered Structures*, Materials Research Society, Pittsburgh, PA, 1990.

**Optically-Detected Magnetic Resonance of Defects in Thin Layers and Heterostructures of III-V Semiconductors**, by Kennedy, T.A., Glaser, E.R., Molnar, B., and Spencer, M.G.\*, *Defect Control in Semiconductors*, Elsevier Science Publishers, 1990, pp. 975-983.

**Optically-Detected Magnetic Resonance of Shallow Donors in  $(\text{GaAs})_x(\text{AlAs})_{1-x}$  Superlattices**, by Trombetta, J.M., Kennedy, T.A., Gammon, D.A., Shanabrook, B.V., and Prokes, S.M., *20th International Conference on the Physics of Semiconductors*, Vol. 2, World Scientific, 1990, pp. 1361-1364.

**Optically Detected Magnetic Resonance of Si-Doped GaAlAs**, by Kennedy, T.A. and Glaser, E., *Solid State Phenomena* **10**:53-64, 1989.

**Organics vs Cuprates. Why is Tc Still So Low in the Organics?**, by Wolf, S.A. and Kresin, V.Z.\*, *Organic Superconductivity*, Plenum Press, 1990, pp. 31-35.

**Oriented BSCCO Thick Film Coatings on Polycrystalline MgO**, by Spann, J.R.\*, Toth, L.E., Lloyd, I.K.\*, Kahn, M., Chase, M.\*, Das, B.N., Francavilla, T.L., and Osofsky, M.S., *Journal of Materials Research* **5**:1163-1168, 1990.

**Perovskite to Antiperovskite in  $\text{ABF}_3$  Compounds**, by Boyer, L.L. and Edwardson, P.J., *Ferroelectrics* **104**:417-422, 1990.

**Phonon Renormalization Due to Disorder and Strong Exchange in the Diluted Magnetic Semiconductor  $\text{Zn}_{1-x}\text{Co}_x\text{Zn}$** , by Mak, C.L.\*, Sooryakumar, R.\*, Jarrell, M.\*, and Jonker, B.T., *20th International Conference on the Physics of Semiconductors*, Vol. 3, World Scientific, 1990, pp. 1815-1818.

**Photoconductor-Based 10-110 GHz On-Chip Device Characterization Technique**, by Rauscher, C., 1:607-610, *IEEE-MTT-S International Microwave Symposium Digest*, IEEE, NY, 1990.

---

An \* identifies an author listed with an affiliation other than NRL.

**Photoemission Study of Cleared GaAs Surfaces Modified by Weak Laser Irradiation Using Combined Laser and Synchrotron Radiation**, by Goldenberg, S.S., Long, J.P., and Kabler, M.N., *20th International Conference on the Physics of Semiconductors, Vol. 1*, World Scientific, 1990, pp. 139-142.

**Photoemission Study of the Adsorption of Nitric Oxide on Gallium Arsenide (110) at Low Temperature**, by Bermudez, V.M., Williams, R.T., Williams, G.P.\*, Rowe, M.W.\*, Liu, H.\*, Wu, A.\*, Sadeghi, H.R., and Rife, J.C., *Journal of Vacuum Science and Technology A8*:1878-1883, 1990.

**Photoluminescence Characterization of Cubic SiC Grown By Chemical Vapor Deposition on Si Substrates**, by Bishop, S.G. and Freitas, J.A.\*, *Journal of Crystal Growth* **106**:38-46, *3rd Workshop on Purification of Materials for Crystal Growth and Glass Processing*, 1990.

**Photoluminescence Studies of Polycrystalline Diamond Films**, by Freitas, J.A.\*, Butler, J.E., and Strom, U., *Journal of Materials Research* **5**:2502-2506, 1990.

**Photoreflectance Characterization of Silicon Films on Insulator**, by Giordana, A.\*, Glosser, R.\*, Pellerino, J.G.\*, Qadri, S.B., Twigg, M.E., Richmond, E.D., Joyner, K.\*, and Pollak, D.\*, *MRS Symposium Proceedings* **188**:349-354, *Thin Films: Stresses and Mechanical Properties II*, Materials Research Society, Pittsburgh, PA, 1990.

**Photoreflectance Measurement of Strain in Strained III-IV Semiconductor Epitaxial Layers**, by Dimoulas, A.\*, Tzanetakis, P.\*, Hatzopoulos, Z.\*, Georgakilas, A.\*, and Glembocki, O.J., *20th International Conference on the Physics of Semiconductors, Vol. 2*, World Scientific, 1990, pp. 1069-1072.

**Photoreflectance Surface Characterization of InP: Fe Substrates**, by Berry, A.K.\*, Gaskill, D.K., and Bottka, N., *SPIE Proceedings* **1286**:85-92, *International Conference on Modulation Spectroscopy*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Photoreflectance Surface Characterization of InP:Fe Substrates**, by Gaskill, D.K., Bottka, N., and Berry, A.K.\*, *6th Conference on Semi-Insulating*, Adam Hilger, 1990, pp. 329-334.

**Physical Aspects of Ion Beam Assisted Deposition**, by Hubler, G.K., Carosella, C.A., Donovan, E.P., Van Vechten, D., Bassel, R.H., Andreadis, T.D., Rosen, M., and Mueller, G.P., *Nuclear Instruments and Methods in Physics Research B46*:384-391, 1990.

**Piezoelectric Properties of 1-3 Composites of a Calcium Modified Lead Titanate in Epoxy Resins**, by Ting, R.Y., Shaulov, A.A.\*, and Smith, W.A.\*, *1990 IEEE Ultrasonics Symposium*, IEEE, NY, 1990, pp. 707-710.

**Plastic Flow in Si/Ge Quantum Well Structures**, by Twigg, M.E.\* and Godbey, D.J., *MRS Symposium Proceedings* **160**:83-88, *Layered Structures - Heteroepitaxy, Superlattices, Strain, and Metastability*, Materials Research Society, Pittsburgh, PA, 1990.

**Polarization of Radiation from Axially Channeled Electrons**, by Fusina, R., *Physical Review B* **42**:7706-7709, 1990.

**Poly(Ethylene Terephthalate) Crystallization as a Method for Microlithography**, by Sonnenschein, M.F.\*, Kotliar, A.M.\*, and Roland, C.M., *Polymer Engineering and Science* **30**:1165-1170, 1990.

**Polytypoids in High Tc Thallium Based Superconducting Materials**, by Singh, A.K.\*, Imam, M.A., Sadananda, K., Qadri, S.B., Skelton, E.F., Osofsky, M.S., LeTourneau, V., and Gubser, D.U., *Journal of Materials Research* **5**:1620-1624, 1990.

**Possibility of LiPdH<sub>x</sub> - as a New Ionic Superconductor**, by Singh, D., Cohen, R.E., and Papaconstantopoulos, D.A., *Physical Review B* **41**:861-864, 1990.

**Possible Effects of Texture and Texture Gradients on Aluminum Reference Standards**, by Mignogna, R.B., Bernetich, K.R.\*, and Hart, S.D.\*, *9:1765-1772, Review of Progress in Quantitative Nondestructive Evaluation*, Plenum Press, NY, 1990.

**Precise Band Structure and Fermi-Surface Calculation for  $\text{YBa}_2\text{Cu}_3\text{O}_7$ : Importance of Three-Dimensional Dispersion**, by Pickett, W.E., Cohen, R.E., and Krakauer, H.\*, *Physical Review B* **42**:8764-8767, 1990.

**Preparation of Orthorhombic  $\text{Ba}_2\text{YCu}_3\text{O}_7$  Powder by Single-Step Calcining**, by Spann, J.R.\*, Lloyd, I.K.\*, Kahn, M., and Chase, M.T.\*, *Journal of the American Ceramic Society* **73**:435-438, 1990.

**The Properties of  $\text{Y}_1\text{B}_2\text{Cu}_3\text{O}_{7.8}$  Thin Films with Silver Doping Prepared by Spray Pyrolysis**, by Cukauskas, E.J., Allen, L.H., Newman, H.S., Henry, R.L., and Van Damme, P.K.\*, *Journal of Applied Physics* **67**:6946-6952, 1990.

**Relating Double Wells to Phase Transitions from Ab Initio Model Calculations**, by Boyer, L.L., *Ferroelectrics* **111**:63-69, 1990.

**Reliability of High Speed HEMT Integrated Circuits and Multi-2DEG Structures**, by Christou, A., *NATO Advanced Research Workshop on Semiconductor Device Reliability*, Kluwer Academic, 1990, pp. 545-556.

**Residual Defects in AlGaAs Co-Implanted with Be and P or As**, by Mango, R., Shelby, R., and Molnar, B., *Journal of Applied Physics* **68**:5090-5094, 1990.

**Response Function Characteristics of Pairing Correlations in the New High-Tc Superconductors**, by Jin, W.\*, Mahanti, S.D.\*, and Rajagopal, A.K., **6**:269-295, *Studies of High Temperature Superconductors*, Nova Science Publishers, 1990.

**Role of Transfer Films in Wear of  $\text{MoS}_2$  Coatings**, by Fayeulle, S.\*, Ehni, P.D., and Singer, I.L., *Mechanics of Coatings*, Elsevier Science, 1990, pp. 129-138.

**Room-Temperature Emission of Highly Excited GaAs/Ga<sub>1-x</sub>AlAs Quantum Wells**, by Lach, E.\*, Forchel, A.\*, Broido, D.A.\*, Reinecke, T.L., Weimann, G.\*, and Schlapp, W.\*, *Physical Review B* **42**:5395-5398, 1990.

**Room-Temperature Fatigue Crack Propagation in Ti-47 Al/TiB<sub>2</sub> Composites**, by Pao, P.S., Pattnaik, A., Gill, S.J., Michel, D.J., and Feng, C.R., *Scripta Metallurgica et Materialia* **24**:1895-1900, 1990.

**A  $\text{S}_{0.7}\text{mGe}_{0.3}$  Strained Layer Etch Stop for the Generation of Bond and Etch Back SOI**, by Godbey, D., Twigg, M.E.\*, Palkuti, L.\*, Leonov, P.\*, Wang, J.\*, Hughes, H., and Kub, F., *1989 IEEE SOS/SOI Technology Conference*, IEEE, NY, 1989, pp. 143-144.

**SEM Observation of Growth and Defect Formation of Heteroepitaxially Grown SiC on (100) Silicon**, by Molnar, B. and Shirey, L.M., **I 162**:457-460, *Diamond, Silicon Carbide and Related Wide Bandgap Semiconductors*, Materials Research Society, Pittsburgh, PA, 1990.

**Semiconductor Device Reliability**, by Christou, A., ed. and Unger, B.A., ed.\*, *NATO ASI, Series E, Applied Sciences* **175**:1-575, *NATO Advanced Research Workshop on Semiconductor Device Reliability*, Kluwer Academic, Boston, 1990.

**Si E' Centers and UV-Induced Compaction in High Purity Silica**, by Tsai, T.E.\*, Griscom, D.L., and Friebele, E.J., *Nuclear Instruments and Methods in Physics Research* **B46**:265-268, 1990.

**Silicon Implantation Into GaAs: Observations of Dose Rate Dependent Electrical Activation and Damage**, by Moore, F.G., Dietrich, H.B., Dobisz, E.A., and Holland, O.W.\*, *Applied Physics Letters* **57**:911-913, 1990.

**Simulation of Transient X-Ray Diffraction from Shocked Crystals**, by Wark, J.S.\*, Whitlock, R.R., Kiehn, G.\*, Smith, R.\*, and Lin, Z.\*, *Shock Compression of Condensed Matter*, North Holland, NY, 1990, pp. 901-904.

- SOI Device Islands Formed by Oxygen Implantation Through Patterned Masking Layers**, by Bussmann, U.\*, Robinson, A.K.\*, Hemment, P.L.F\*, and Campisi, G.J., *IEEE SOS/SOI Technology Conference*, IEEE, 1990, pp. 51-52.
- Spin Density Waves in a Quasi-Two-Dimensional Electron Gas**, by Gammon, D.G., Shanabrook, B.V., Ryan, J.C., and Katzer, D.S., *Physical Review B* **41**:12311-12314, 1990.
- $\beta$ -Silicon Carbide Prepared by Rapid Thermal Chemical Vapor Deposition**, by Liao, J.C.\*, Crowley, J.L.\*, and Klein, P.H., *Amorphous and Crystalline Silicon Carbide II Recent Developments*, Springer-Verlag, NY, 1989, pp. 20-25.
- A Stable n-channel Indium Phosphide Field-Effect Transistor with an Amorphous Hydrogenated Silicon Gate**, by Roditi, E.\*, Iliadis, A.A.\*, and Christou, A., *MRS Symposium Proceedings* **160**:811-814, *Layered Structures - Heteroepitaxy, Superlattices, Strain, and Metastability*, Materials Research Society, Pittsburgh, PA, 1990.
- Statics and Dynamics of Icosahedrally Twinned and Single-Crystal FCC Clusters**, by Boyer, L.L. and Broughton, J.Q., *Physical Review B* **42**:11461-11468, 1990.
- Stoichiometric Defects in InP**, by Kennedy, T.A. and Lin-Chung, P.J., *Semiconductors and Semimetals* **31**:357-389, *Indium Phosphide: Crystal Growth and Characterization*, Academic Press, NY, 1990.
- Strain Induced Two Dimensional Electron Gas in (111) Growth Axis Strained Layer Structures**, by Snow, E.S., Shanabrook, B.V., and Gammon, D., *Applied Physics Letters* **56**:758-760, 1990.
- Streaked X-Ray Diffraction From Laser Shocked Crystals**, by Wark, J.S.\* and Kiehn, G.\*, *Shock Compression of Condensed Matter*, North Holland, NY, 1990, pp. 897-900.
- Structural Characterization of Molecular Beam Epitaxially Grown  $\text{Zn}_{1-x}\text{Mn}_x\text{Se}$  and  $\text{Zn}_{1-x}\text{Mn}_x\text{Se/ZnSe}$  Superlattices**, by Qadri, S.B., Samarth, N.\*, and Furdyna, J.K.\*, *Journal of Vacuum Science and Technology A* **8**:1884-1887, 1990.
- Structural Properties of Ordered High-Melting-Temperature Intermetallic Alloys from First-Principles Total-Energy Calculations**, by Mehl, M.J., Osburn, J.E., Papaconstantopoulos, D.A., and Klein, B.M., *Physical Review B* **41**:10311-10323, 1990.
- Structure and Electronic Properties of Semiconductor Interfaces**, by Kaxiras, E.\*, *20th International Conference on the Physics of Semiconductors, Vol. 1*, World Scientific, 1990, pp. 95-102.
- The Structure and Properties of Ni Films Grown by Ion Beam Assisted Deposition**, by Kant, R.A., Chambers, G.P., and Sartwell, B.D., *MRS Symposium Proceedings* **157**:67-72, *Beam-Solid Interactions: Physical Phenomena*, Materials Research Society, Pittsburgh, PA, 1990.
- Structure Determination of Metastable Cobalt Films Deposited on GaAs**, by Idzerda, Y.U., Jonker, B.T., Elam, W.T., and Prinz, G.A., *Journal of Vacuum Science and Technology A* **8**:1572-1576, 1990.
- Studies of Diamond Chemical Vapor Deposition**, by Butler, J.E., Celii, F.G., Oakes, D.B., Hanssen, L.M., and Carrington, W.A.\*, *High Temperature Science* **27**:183-197, 1990.
- A Study of Si Implanted with Oxygen Using Spectroscopic Ellipsometry**, by McMarr, P.J., Mrstik, B.J., Barger, M.S.\*, Bowden, G.\*, and Blanco, J.R.\*, *Journal of Applied Physics* **67**:7211-7222, 1990.
- Subband Dependence of Bandgap Renormalization in Semiconductor Quantum Wells: Theory and Experiment**, by Reinecke, T.L., Broido, D.A.\*, Lach, E.\*, Forchel, A.\*, Weimann, G.\*, Schlapp, W.\*, and Gruetzmacher, D.\*, *20th International Conference on the Physics of Semiconductors, Vol. 2*, World Scientific, 1990, pp. 1113-1116.

**Surface Space Charge Dynamics and Surface Recombination on Silicon (111) Surfaces Measured with Combined Laser and Synchrotron Radiation**, by Long, J.P., Sadeghi, H.R., Rife, J.C., and Kabler, M.N., *Physical Review Letters* **64**:1158-1161, 1990.

**Synthesis and Structural Properties of Ion-Beam Sputtered Cu/Ni Multilayers**, by Kim, C., Qadri, S.B., Twigg, M.E., and Edelstein, A.S., *Journal of Vacuum Science and Technology A8* 3466-3469, 1990.

**Synthesis and Structure of Ion-Beam Sputtered Multilayer Fe/Ni Films**, by Kim, C., Qadri, S.B., Yu, H.Y.\*, Kim, K.H., Maruyama, B., and Edelstein, A.S., *Journal of Vacuum Science and Technology A8*:1407-1410, 1990.

**Technology Comparison of Interface States as Measured by Charge Pumping: Bulk vs SIMOX**, by Lawrence, R.K.\* and Hughes, H.L., *1989 IEEE SOS/SOI Technology Conference*, IEEE, NY, 1989, pp. 89-90.

**A TEM Study of Epitaxial Fe/Ag and Mn/Ag Superlattices**, by Nahm, S.\*, Salamanca-Riba, L.\*, Jonker, B.T., and Prinz, G.A., *MRS Symposium Proceedings 160*:209-214, *Layered Structures - Heteroepitaxy, Superlattices, Strain, and Metastability*, Materials Research Society, Pittsburgh, PA, 1990.

**Temperature Dependent Exciton Linewidths in Semiconductors**, by Rudin, S., Reinecke, T.L., and Segall, B.\*, *Physical Review B* **42**:11218-11231, 1990.

**Temperature-Dependent Excitation Linewidths in Semiconductor Quantum Wells**, by Rudin, S.\* and Reinecke, T.L., *Physical Review B* **41**:3017-3027, 1990.

**Theoretical Determination of Strong Electron-Phonon Coupling in  $\text{YBa}_2\text{Cu}_3\text{O}_7$** , by Cohen, R.E., Pickett, W.E., and Krakauer, H.\*, *Physical Review Letters* **64**:2575-2578, 1990.

**Theoretical Electron-Positron Reduced Momentum Densities for  $\text{YBa}_2\text{Cu}_3\text{O}_{7.8}$ : Fermi Surface and Wave Function Effects**, by Singh, D., Pickett, W.E., Von Stetten, E.C.\*, and Berko, S.\*, *Physical Review B* **42**:2696-2699, 1990.

**Theoretical Study of Native Defects and Impurities in InP**, by Jansen, R.W., *Physical Review B* **41**:7666-7673, 1990.

**Thermal Annealing Investigation of the Optical Properties of  $\text{B}_x\text{N}_{1-x}$  Films Fabricated by Ion Beam Assisted Deposition and Application for an Optical Filter**, by Carosella, C.A., Donovan, E.P., Hubler, G.K., and Skowronek, A.E., *MRS Symposium Proceedings 157*:61-66, *Beam-Solid Interactions: Physical Phenomena*, Materials Research Society, Pittsburgh, PA, 1990.

**Time-Suspension Multiple-Pulse Sequences: Applications to Solid-State Imaging**, by Cory, D.G., Miller, J.B., and Garroway, A.N., *Journal of Magnetic Resonance* **90**:205-213, 1990.

**Total Energy Calculations of Solid H, Li, Na, K, Rb, and Cs**, by Sigalas, M.\*, Bacalis, N.C.\*, Papaconstantopoulos, D.A., Mehl, M.J., and Switendick, A.C.\*, *Physical Review B* **42**:11637-11643, 1990.

**Transient Current and Transient Capacitance Measurements of Defects in AlGaAs HEMTs**, by Mango, R. and Shelby, R., *MRS Symposium Proceedings 163*:789-792, *Impurities, Defects and Diffusion in Semiconductors: Bulk and Layered Structures*, Materials Research Society, Pittsburgh, PA, 1990.

**Transport Properties of Narrow Gap II-VI Superlattices**, by Hoffman, C.A., Meyer, J.R., and Bartoli, F.J., *MRS Symposium Proceedings 161*:403-411, *Properties of II-VI Semiconductors: Bulk Crystals, Epitaxial Films, Quantum Well Structures and Dilute Magnetic Systems*, Materials Research Society, 1990.

**Transport-Theory Approach to Ion-Beam Mixing and Recoil Implantation**, by Manning, I., *Physical Review B* **42**:9853-9858, 1990.

**U.S. Navy Superconductivity Program**, by Gubser, D.U., NASA-CP-3100:487-488, *Advances in Materials Science and Applications of High Temperatures Superconductors*, National Aeronautics & Space Administration, 1990.

**Ultrasonic Determination of Elastic Constants from Oblique Angles of Incidence in Non-Symmetry Planes**, by Mignogna, R.B., *Review of Progress in Quantitative Nondestructive Evaluation* **9**:1565-1572, Plenum Press, NY, 1990.

**Ultrasonic Imaging of Disbonds in Adhesively Bounded Cylindrical Layers**, by Batra, N.K., Simmonds, K.E., and Chaskelis, H.H., **9**:1255-1262, *Review of Progress in Quantitative Nondestructive Evaluation*, Plenum Press, NY, 1990.

**Use of the Connection Machine to Study Ultrasonic Wave Propagation In Materials**, by Delsanto, P.P.\*, Whitcombe, T., Chaskelis, H.H., and Mignogna, R.B., **9**:141-148, *Review of Progress in Quantitative Nondestructive Evaluation*, Plenum Press, NY, 1990.

**Vortex Structure: Lattice, Glass, or Liquid?**, by Soulen, R.J. and Wolf, S.A., *MRS Symposium Proceedings* **169**:859-862, *High Temperature Superconductors: Fundamental Properties and Novel Materials*, Materials Research Society, Pittsburgh, PA, 1990.

**X-Ray Characterization of Silicon on Insulator Substrates**, by Campisi, G.J., Ma, D.I., Qadri, S.B., and Peckerar, M.C., *Proceedings IEEE SOS/SOI Technology Conference*, IEEE, 1990, pp. 75-76.

**X-Ray Photoelectron and Auger Electron Spectroscopy**, by Turner, N.H., *Analytical Instrumentation Handbook*, Marcel Dekker, Inc., 1990, pp. 531-565.

**X-Ray-Absorption Five-Structure Measurement of Single-Crystal Materials**, by Kim, K.H., Elam, W.T., Kirkland, J.P.\*, and Neiser, R.A.\*, *Physical Review B* **42**:10724-10726, 1990.

## Space Science and Technology

**Accreting Galactic X-Ray Sources**, by Hertz, P., *Imaging X-Ray Astronomy: A Decade of Einstein Observatory Achievements*, Cambridge University Press, 1990, pp. 109-122.

**The Ar/Ca Abundance Ratio in Solar Flares**, by Doschek, G.A. and Seely, J.F., *Astrophysical Journal* **348**:341-345, 1990.

**The Beam Driven Chromospheric Evaporation Model of Solar Flares: A Model Not Supported by Observations from Nonimpulsive Large Flares**, by Feldman, U., *Astrophysical Journal* **364**:322-325, 1990.

**The Big Optical Array**, by Mozurkewich, D. and Johnston, K.J., *SPIE Proceedings* **1237**:120-127, *Amplitude and Intensity Spatial Interferometry*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**The Charge State of the Anomalous Component**, by Adams, J.H. and Tylka, A.J.\*, *Cosmic Abundances of Matter*, 1989, pp. 394-395.

**Coastline Detection and Tracing in SAR Images**, by Lee, J.S. and Jurkevich, I., *IEEE Transactions on Geoscience and Remote Sensing* **28**:662-668, 1990.

**A Comparison of Models of the Sun's Extreme Ultraviolet Irradiance Variations**, by Lean, J.L., *Journal of Geophysical Research* **95**:11933-11944, 1990.

**Compressible Dynamic Alignment**, by Dahlburg, R.B., Picone, J.M., and Karpen, J.T., *Geophysical Monograph* **54**:95-98, *Solar System Plasma Physics*, American Geophysical Union, Washington DC, 1989.



**Dynamical and Photometric Models of Star Formation in Tidal Tails**, by Wallin, J.F., *Astrophysical Journal* 100:1477-1488, 1990.

**Dynamics, Catastrophe and Magnetic Energy Release of Toroidal Solar Current Loops**, by Chen, J., *Geophysical Monographs* 58:269-277, *AGU Chapman Conference on the Physics of Magnetic Flux Ropes*, American Geophysical Union, 1990.

**The Effect of Nonequilibrium Ionization on Ultraviolet Line Shifts in the Solar Transition Region**, by Spadaro, D.\*, Noci, G.\*, Zappala, R.A.\*, and Antiochos, S.K., *Astrophysical Journal* 355:342-347, 1990.

**The Effects of Nonequilibrium Ionization on the Radiative Losses of the Solar Corona**, by Spadaro, D.\*, Zappala, R.A.\*, Antiochos, S.K., Lanzafame, G.\*, and Noci, G.\*, *Astrophysical Journal* 362:370-378, 1990.

**Energy Loss Mechanisms for Fast Particles**, by Beall, J.H., *Physical Processes in Hot Cosmic Plasmas*, Kluwer Academic, 1990, pp. 341-355.

**Equilibrium of Solar Coronal Arcades**, by Finn, J.M.\* and Chen, J., *Astrophysical Journal* 349:345-361, 1990.

**An Estimate of Changes in the Sun's Total Irradiance Caused by UV Irradiance Variations from 1874 to 1988**, by Lean, J.L., *NASA-CP-3086, Climate Impact of Solar Variability*, NASA, Goddard Space Flight Center, 1990, p. 3

**Evaluation of Large Format Electron Bombarded Virtual Phase CCDs as Ultraviolet Imaging Detectors**, by Opal, C.B. and Carruthers, G.R., *SPIE Proceedings* 1158:96-103, *Ultraviolet Technology III*, Society of Photo-optical and Instrumentation Engineers, Bellingham, WA, 1989.

**The Evolution of a Sheared Potential Magnetic Field in the Solar Corona**, by Karpen, J.T., Antiochos, S.K., and DeVore, C.R., *Basic Plasma Processes on the Sun*, Kluwer Academic Publishers, Boston, 1990, pp. 309-312.

**Evolution of the 155-Day Periodicity in Sunspot Areas During Solar Cycles 12 to 21**, by Lean, J.L., *Astrophysical Journal* 363:718-727, 1990.

**An Explanation for Cosmic-Ray Source Abundances Including Nitrogen**, by Silberberg, R. and Tsao, C.H., *Astrophysical Journal* 352:L49-L52, 1990.

**The Far Ultraviolet Imaging Spectrograph on Spartan-281**, by Carruthers, G.R., Heckathorn, H.M., Raymond, J.C.\*, Dubour, R.J.\*, Witt, A.N.\*, and Opal, C.B.\*, 139:459-460, *The Galactic and Extragalactic Background Radiation: IAU Symposium*, Kluwer Academic Publishers, 1990.

**Four X-Ray-Selected Cataclysmic Variables in the Galactic Plane**, by Hertz, P.L., Bailyn, C.D.\*, Grindlay, J.E.\*, Garcia, M.R.\*, Cohn, H.\*, and Lugger, P.M.\*, *Astrophysical Journal* 364:251-258, 1990.

**Hardware Image Motion Compensation for a Scanning, Space-Borne Sensor**, by Lucke, R.L., *Infrared Physics* 30:121-141, 1990.

**High-Quality Images of the CSS Quasars 3C 48 and 3C 380**, by Wilkinson, P.N.\*, Tzioumis, A.D.\*, Akajor, C.E.\*, Benson, J.M.\*, and Walker, R.C., *Parsec-Scale Radio Jets*, Cambridge University Press, NY, 1990, pp. 152-160.

**III Regions in Absorption at Low Frequencies**, by Kassim, N.E., 207:218-224, *Astrophysics from the Moon*, American Institute of Physics, 1990.

**Implications of a Strongly Peaked Polar Magnetic Field**, by Sheeley, N.R., Wang, Y.M., and DeVore, C.R., *Solar Physics* 124:1-13, 1989.

**Independence of Short Time Scale Fluctuations of Quasi-Periodic Oscillations and Low-Frequency Noise in GF 5-1**, by Norris, J.P., Hertz, P., Wood, K.S., Vaughan, B.A.\*, Michelson, P.F.\*, Mitsuda, K.\*, and Dotani, T.\*, *Astrophysical Journal* 361:514-526, 1990.

**Large-Format Electrographic and Array Detectors for a Space Schmidt Imaging Telescope**, by Carruthers, G., Fischer, J., Wray, J.D.\*, and Lawrence, J.L.\*, *SPIE Proceedings* **1235**:920-932, *Instrumentation in Astronomy VII*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Latitudinal Distribution of Solar-Wind Speed from Magnetic Observations of the Sun**, by Wang, Y.M., Sheeley, N.R., and Nash, A. G., *Nature* **347**:439-444, 1990.

**A Limit on the Production of  $^{56}\text{Ni}$  in a Type 1 Supernova**, by Matz, S.M. and Share, G.H., *Astrophysical Journal* **362**:235-240, 1990.

**Limits on a Variable Source of 511 keV Annihilation Radiation Near the Galactic Center**, by Share, G.H., Leising, M.D., Messina, D.C.\*, and Purcell, W.R.\*, *Astrophysical Journal* **358**:L45-L48, 1990.

**Magnetic Flux Transport and the Sunspot Cycle Evolution of Coronal Holes and Their Wind Streams**, by Wang, Y.M. and Sheeley, N.R., *Astrophysical Journal* **365**:372-386, 1990.

**Measurement of the 0.3-8.5 MeV Galactic Gamma-Ray Spectrum from the Galactic Center Direction**, by Harris, M.J.\*, Share, G.H., Leising, M.D., Kinzer, R.L., and Messina, D.C.\*, *Astrophysical Journal* **362**:135-146, 1990.

**Ne VII Line Ratios in the Sun**, by Keenan, F.P.\*, McCann, S.M.\*, and Widing, K. G., *Astronomical Journal* **363**:315-317, 1990.

**Neutrino Sources Observable at Energies of 1 GeV to 1 TeV from a 21st Century Lunar Base**, by Shapiro, M.M.\* and Silberberg, R., **203**:312-316, *Particle Astrophysics: The NASA Cosmic Ray Program for the 1990's and Beyond*, American Physical Society, 1990.

**Numerical Jet Simulations and Parsec-Scale Jets**, by Lind, K.R., *Parsec-Scale Radio Jets*, Cambridge University Press, NY, 1990, pp. 274-279.

**Numerical Simulations of the Rebound Shock Model for Spicules**, by Sterling, A.C. and Mariska, J.T., *Astrophysical Journal* **349**:647-655, 1990.

**Observational Signatures of Nonlinear Magnetotail Particle Dynamics**, by Chen, J., Burkhart, G.R., and Huang, C.Y.\*, *Geophysical Research Letters* **17**:2237-2240, 1990.

**Observations of the Characteristics of Propagation of VLF Signals During Meridian Transits by SCO X-I**, by Beall, J.H.\*, Wood, K.S. and Kelly, F.J., *Ionospheric Effects Symposium*, Naval Research Laboratory, 1990, pp. 533-541.

**Observations of the Galactic Plane by the Zodiacal Infrared Project**, by Rickard, L.J., Stemwedel, S.W.\*, and Price, S.D.\*, NASA-CP-3084:123-125, *The Interstellar Medium in External Galaxies: Summaries of Contributed Papers*, National Aeronautics & Space Administration, 1990.

**On the Anomalous Abundances of the  $2 \times 10^4$ - $2 \times 10^5$  K Solar Atmosphere Above a Sunspot**, by Feldman, U., Widing, K. G., and Lund, P.A.\*, *Astrophysical Journal* **364**:L21-L23, 1990.

**On the Dependence of Solar Flare X-Ray Spectral Line Intensity Ratios of Highly Ionized Sulfur, Calcium, and Iron on Electron Temperatures**, by Doschek, G.A., Fludra, A.\*, Bentley, R.D.\*, Lang, J.\*, Phillips, K.J.H\*, and Watanabe, T.\*, *Astrophysical Journal* **358**:665-673, 1990.

**On the Formation of Current Sheets in the Solar Corona**, by Karpen, J.T., Antiochos, S.K., and DeVore, C.R., *Astrophysical Journal* **356**:L67-L70, 1990.

**On the Stability Properties of White Dwarf Settling Solution Shocks**, by Wolff, M.T.\*, Imamura, J.N.\*, Wood, K.S., and Gardner, J.H., *Accretion-Powered Compact Binaries. Proceedings of the 11th North American Workshop on Cataclysmic Variables and Low Mass X-Ray Binaries*, Cambridge University Press, NY, 1990, pp. 335-338.

**Optical Diameters of Stars Measured with the Mt. Wilson Mark III Interferometer**, by Simon, R.S.\*, Mozurkewich, D., Johnston, K.J., Gaume, R., Hutter, D.J.\*, Bowers, P.F.\*, Calavita, M.M.\*, and Shao, M.\*, *SPIE Proceedings* 1237:316-326, *Amplitude and Intensity Spatial Interferometry*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Optical Observations of Close Binaries with the Mark III Stellar Interferometer**, by Pan, X.P.\*, Shao, M.\*, Calavita, M.M.\*, Armstrong, T., Mozurkewich, D., Simon, R.S., Denisson, C., Vivekanand, M., and Johnston, K.J., *SPIE Proceedings* 1237:301-315, *Amplitude and Intensity Spatial Interferometry*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Optimal Filter Techniques for Quasi-Periodic Oscillations**, by Norris, J.P., Hertz, P., Wood, K.S., Vaughan, B.A.\*, Michelson, P.F., Mitsuda, K\*, and Dotani, T.\*, *Accretion-Powered Compact Binaries. Proceedings of the 11th North American Workshop on Cataclysmic Variables and Low Mass X-Ray Binaries*, Cambridge University Press, NY, 1990, pp. 73-76.

**Optimum Interpolation of Imaging Microwave Radiometer Data**, by Poe, G.A., *IEEE Transactions on Geoscience and Remote Sensing* 28:800-810, 1990.

**Orientations, Ellipticities and Nearest Neighbor Correlations in Rich Clusters of Galaxies**, by Ulmer, M.P.\*, McMillan, S.L.W.\*, and Kowalski, M.P., *Advances in Space Research* 10:2:13-15, *X-Ray and Gamma-Ray Astronomy*, Pergamon Press, NY, 1990.

**Photospheric Abundances of Oxygen, Neon, and Argon Derived from the XUV Spectrum of an Impulsive Flare**, by Feldman, U. and Widing, K.G., *Astrophysical Journal* 363:292-298, 1990.

**A Possible New Association of a Pulsar with a Supernova Remnant**, by Kassim, N.E. and Weiler, K.W., *Nature* 343:146-148, 1990.

**Radio Emission from Supernovae II. SN1986J: A Different Kind of Type II**, by Weiler, K.W., Panagia, N.\*, and Sramek, R.A.\*, *Astrophysical Journal* 364:611-625, 1990.

**Radio Spectrum Studies of 32 First Quadrant Galactic Supernova Remnants**, by Kassim, N.E., *Astrophysical Journal Supplement Series* 71:799-815, 1989.

**The Relationship Between Gas and Cirrus Dust Filaments at the Edge of the Expanding Shell in Eridanus**, by Verschuur, G.L., Venter, F., Rickard, L.J., and Leisawitz, D.T.\*, *The Galactic and Extragalactic Background Radiation. IAU Symposium*, Kluwer Academic Publishers, 1990, pp. 235-236.

**Relationship of Magnetic Field Strength and Brightness of Fine-Structure Elements in the Solar Temperature Minimum Region**, by Cook, J.W. and Ewing, J.A., *Astrophysical Journal* 355:719-725, 1990.

**Return of the Hard Flares' 154 Day Periodicity in Solar Cycle 22 and Evidence for a Phase Relationship of this Periodicity between Cycles 21 and 22**, by Brueckner, G.E. and Cook, J.W., *Astrophysical Journal* 350:L21-L24, 1990.

**Search for Millisecond X-Ray Pulsations from the Galactic Bulge X-Ray Source GX9+1**, by Hertz, P., Norris, J.P., Wood, K.S., Vaughan, B.A.\*, and Michelson, P.F.\*, *Astrophysical Journal* 354:267-272, 1990.

**Sensitive VLA Observations of OH 127.8-0.0 and OH 26.5+0.6**, by Bowers, P.F.\* and Johnston, K.J., *Astrophysical Journal* 354:676-686, 1990.

**Soft X-Ray Spectroscopy of Solar Flares: An Overview**, by Doschek, G.A., *Astrophysical Journal. Supplemental Series* 73:117-130, 1990.

**Solar Coronal Ar/Fe and Ne/Mg Abundance Ratios Derived from Ultraviolet Forbidden Line Spectra**, by Doschek, G.A., *Astrophysical Journal* 358:338-343, 1990.

---

An \* identifies an author listed with an affiliation other than NRL.

**Solar Cycle Modulation of Total Irradiance: An Empirical Model From 1874 to 1988**, by Lean, J.L. and Foukal, P.\*, *NASA-CP-3086*:197-204, *Climatic Impact of Solar Variability*, NASA, Goddard Space Flight Center, 1990.

**Solar Wind Speed and the Flux-Tube Expansion**, by Wang, Y.M. and Sheeley, N.R., *Astrophysical Journal* **355**:726-732, 1990.

**Source Composition of Cosmic Rays**, by Silberberg, R., Tsao, C.H., and Shapiro, M.M.\*, **203**:317-320, *Cosmic Ray Program for the 1990s and Beyond*, American Physical Society, 1990.

**Source Composition of Cosmic Rays at Energies 1-1000 TeV per Nucleon**, by Silberberg, R., Tsao, C.H., Shapiro, M.M.\*, and Biermann, P. L., *Astrophysical Journal* **363**:265-269, 1990.

**A Space Schmidt Imaging Telescope: Optical Concept and Astrophysical Objectives**, by Carruthers, G.R., Fischer, J., Wray, J.D.\*, Schroeder, D.J.\*, O'Connell, R.W.\*, and Witt, A.N.\*, *SPIE Proceedings* **1236**:215-236, *Advanced Technology Optical Telescopes IV*, Society of Photooptical and Instrumentation Engineers, Bellingham, WA, 1990.

**Spallation Processes and Nuclear Interaction Products of Cosmic Rays**, by Silberberg, R. and Tsao, C.H., *Physics Reports* **191**:351-410, 1990.

**The Spartan-1 Mission**, by Cruddace, R. G., Brandenstein, D.C.\*, Creighton, J.O.\*, Fabian, J.M.\*, Fenimore, E.E.\*, Fritz, G. G., Gross, C.\*, Gutschewski, G.\*, Luccid, S.W.\*, Nagel, S.R., Shrewsbury, D.J.\*, and Zimmerman, D.\*, *Journal of the British Interplanetary Society* **43**:223-229, 1990.

**Spartan-1 X-Ray Observations of the Perseus Cluster: II. The Distribution of Flux and Hardness Ratio Out to a Radius of 50 arcminutes**, by Snyder, W.A., Kowalski, M.P., Cruddace, R. G., Fritz, G.G., Middleditch, J.\*, Fenimore, E.E.\*, Ulmer, M.P.\*, and Majewski, S.R.\*, *Astrophysical Journal* **365**:460-470, 1990.

**SSM/I Instrument Evaluation**, by Hollinger, J.P., Peirce, J.L.\*, and Poe, G.A., *IEEE Transactions on Geoscience and Remote Sensing* **28**:781-790, 1990.

**Structure and Flows in Coronal Loops**, by Antiochos, S.K., *Geophysical Monographs* **58**:203-210 *AGU Chapman Conference on the Physics of Magnetic Flux Ropes*, American Geophysical Union, 1990.

**A Study of the Geolocation Errors of the Special Sensor Microwave/Imager (SSM/I)**, by Poe, G.A. and Conway, R.W.\*, *IEEE Transactions on Geoscience and Remote Sensing* **28**:791-799, 1990.

**Thermal Instability in Magnetized Solar Plasmas**, by Karpen, J.T., Antiochos, S.K., Picone, J.M., and Dahlburg, R.B., *Geophysical Monograph* **54**:99-103, *Solar System Plasma Physics*, American Geophysical Union, 1989.

**A Toolbox for Nonlinear Dynamics**, by Coffey, S., Deprit, A.\*, Deprit, E., Healy, L., and Miller, B.R.\*, *Computer Aided Proofs in Analysis*, 1990, pp. 97-115.

**Ultraviolet Limb Imaging Experiment**, by Conway, R.R., Anderson, D.E., Budzien, S.A.\*, and Feldman, P.D.\*, *SPIE Proceedings* **1158**:2-15, *Ultraviolet Technology III*, Society of Photo-Optical Instrumentation Engineers, Bellingham, WA, 1989.

**Ultraviolet Observations of the Preimpulsive Phase in a Solar Flare: Enhanced Turbulence and Heating**, by Cheng, C.C., *Astrophysical Journal* **349**:362-368, 1990.

**The Visual Appearance of Comets under Varying Solar Wind Conditions**, by Russell, C.T.\*, Guan, L.\*, Luhmann, J.G.\*, and Fedder, J.A., *Advances in Space Research* **9**:393-396, *Symposium 5, Workshop IV and Part of the Topical Meeting of COSPAR Interdisciplinary Scientific Commission C*, Pergamon Press, 1989.

**The VLBI Structure of Cyg X-3 During the 1985 October Radio Outburst**, by Shalinski, C.J.\*, Johnston, K.J., and Witzel, A., *Parsec-Scale Radio Jets*, Cambridge University Press, NY, 1990, pp. 140-151.

**W30 Revealed: Separation and Analysis of Thermal and Nonthermal Emission in a Galactic Complex**, by Weiler, K., *Astrophysical Journal* **360**:184-196, 1990.

**An X-Ray Large Array for Astrophysics at a Lunar Base**, by Wood, K.S., **207**:393-408, *Astrophysics from the Moon*, 1990.

## Structure Research

**Apolar Peptide Models for Conformational Heterogeneity, Hydration and Packing of Polypeptide Helices: Crystal Structures of Hepta and Octapeptides Containing Alpha-Aminoisobutyric Acid**, by Karle, I.L., Flippen-Anderson, J.L., Uma, K.\*, and Balaram, P.\*, *Proteins: Structure, Function and Genetics* **7**:62-73, 1990.

**Comparative Anatomy of Phospholipase A2 Structures**, by Ward, K.B. and Pattabiraman, N., *Advances in Experimental Medicine and Biology* **279**:23-36, *Biochemistry, Molecular Biology, and Physiology of Phospholipase A2 and its Regulatory Factors*, Plenum Press, 1990.

**Growth, Structure and Oxidation of Ordered Silicon Layers on Nickel (001)**, by Bermudez, V., *Surface Science Letters* **230**:L155-L161, 1990.

**Helix Aggregation in Peptide Crystals. Occurrence of Either All Parallel or Antiparallel Packing Motifs for  $\alpha$ -Helices in Polymorphs of Bac-Aib-Ala-Leu-Ala-Leu-Aib-Leu-Ala-Leu-Cub-OMe**, by Karle, I.L. and Balaram, P.\*, *Biopolymers* **29**:1835-1845, 1990.

**Hydration of Helix Backbones in Hydrophobic Peptides**, by Karle, I.L., Flippen-Anderson, J.L., Uma, K.\*, and Balaram, P.\*, *Peptides, Proceedings of the 11th American Peptide Symposium*, ESCOM Science Publication, Leiden, Netherlands, 1990, pp. 544-547.

**Laser and Mass Spectrometric Studies of the Mechanism of Silicon (100) Single Crystal Etching Reactions**, by Horwitz, J.S. and Lin, M.C.\*, *High Temperature Science* **27**:265-278, *6th International Conference on High Temperatures NIST*, 1990.

**Modular Design of Synthetic Protein Mimics. Crystal Structures, Assembly and Hydration of Two 15 and 16 Residue Apolar, Leucyl-Rich Helical Peptides**, by Karle, I.L., Uma, K.\*, Sukumar, M.\*, and Balaram, P.\*, *Journal of the American Chemical Society* **112**:9350-9356, 1990.

**Parallel and Antiparallel Aggregation of  $\alpha$ -Helices: Crystal Structures of Two Apolar Decapeptides X-Trp-Ile-Ala-Aib-Ile-Val-Aib-Leu-Aib-Pro-OMe (X=Boc, Ac)**, by Karle, I.L., Flippen-Anderson, J.L., Sukumar, M.\*, and Balaram, P.\*, *International Journal of Peptide Protein Research* **35**:518-526, 1990.

**Parallel Zippers Formed by  $\alpha$ -Helical Peptide Columns in Crystals of Boc-Aib-Glu(OBzl)-Leu-Aib-Ala-Leu-Aib-Ala-Lys(Z)-Aib-OMe**, by Karle, I.L., Flippen-Anderson, J.L., Uma, K.\*, and Balaram, P.\*, *Proceedings of the National Academy of Science* **87**:7921-7925, 1990.

**Peptide Design. Influence of a Guest Aib-Pro Segment on the Stereochemistry of an Oligo-Val Sequence - Solution Conformations and Crystal Structure of Boc-(Val)<sub>2</sub>-Aib-Pro-(Val)<sub>3</sub>-OMe**, by Karle, I.L., Flippen-Anderson, J.L., Uma, K.\*, Balaram, H.\*, and Balaram, P.\*, *Biopolymers* **29**:1433-1442, 1990.

**The Role of Motivation in Scientific Research II: A View of Creativity**, by Karle, J., *Interdisciplinary Science Reviews* **15**:357-363, 1990.

**Structural Characteristics of  $\alpha$ -Helical Peptide Molecules Containing Aib Residues**, by Karle, I. and Balaram, P.\*, *Biochemistry* **29**:6747-6756, 1990.

---

An \* identifies an author listed with an affiliation other than NRL.

**Structure of 1, 3-Dinitro-1, 3-Diazacyclopentan-2-one**, by George, C., Flippen-Anderson, J.L., and Gilardi, R., *Acta Crystallographica* **C46**:703-704, 1990.

**Structure of a Dimer Ketone\* Formed via Fe(CO)<sub>5</sub>-Promoted Coupling of 7-(p-Cyanophenoxy) Norbornadiene to Carbon Monoxide**, by Flippen-Anderson, J.L., Gilardi, R., George, C., Marchand, A.P.\*, and Dave, P.R.\*, *Acta Crystallographica* **C46**:807-809, 1990.

**The Structure of T-2 Toxin**, by Gilardi, R., George, C., and Flippen-Anderson, J.L., *Acta Crystallographica* **C46**:645-648, 1990.

**Structures of 1,3,5-Trinitro-2-Oxo-1,3,5-Triazacyclohexane (I) and 1, 4 Dinitro-2, 5-Dioxo-1, 4-Diazacyclohexane (II)**, by Gilardi, R., Flippen-Anderson, J.L., and George, G., *Acta Crystallographica* **C46**:706-708, 1990.

**Structures of 2,5,7,9-Tetranitro-8-Oxo-2, 5,7,9-Tetraazabicyclo[4.3.0] Nonane (I) and 2,5,7,9-Tetranitro-8-Acetoxy-2,5,7,9-Tetraazabicyclo [4.3.0] Nonane (II)**, by Flippen-Anderson, J.L., George, C., and Gilardi, R., *Acta Crystallographica* **C46**:1122-1125, 1990.

**Synthetic Peptide Helices in Crystals. Structure and Antiparallel and Skewed Packing Motifs for  $\alpha$ -Helices in Two Isomeric Decapeptides**, by Karle, I.L., Flippen-Anderson, J.L., Uma, K.\*, and Balaram, P.\*, *Biopolymers* **30**:719-731, 1990.

**Vernamycin Bx**, by Karle, I.L. and Flippen-Anderson, J.L., *Acta Crystallographica* **C46**:303-306, 1990.

## 1990 In-House Publications

**Acoustic Noise Measurements Utilizing High Performance Fiber Optic Hydrophones in the Arctic**, by Yurek, A.M., Tveten, A.B., and Dandridge, A., **NRL-MR-6729**, pp. 38, October 12, 1990, From NTIS as ADA-228175.

**Advanced Concepts Theory Annual Report 1989. Final Report**, by Radiation Hydrodynamics, Branch, **NRL-MR-6612**, pp. 174, March 29, 1990, From NTIS as ADA-220768.

**Air Chemistry Aspects of the ATA Multi-pulse Experiment**, by Slinker, S., Ali, A.W., and Taylor, R.D., in **NRL-MR-6677**, pp. 9-12, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226443.

**An Algorithm for Improved Gating Combinatorics in Multiple-Target Tracking**, by Picone, J.M., Zuniga, M.R., and Uhlmann, J.K., **NRL-MR-6691**, pp. 22, August 2, 1990 (*Submitted to IEEE Transactions on Aerospace and Electronic Systems, April 1990*), From NTIS as ADA-224700.

**Ambiguity Resolution Modeling for Distributed Array Technology**, by Weaver, T.S., **NRL-9277**, June 12, 1990.

**Analysis of Channel Tracking in Super IBEX and PULSERAD**, by Taylor, R.D., Fernsler, R.F., Hubbard, R.F., and Slinker, S.P., in **NRL-MR-6675**, pp. 9-12, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226553.

**Analysis of Cocaine, Heroin, and Their Metabolites in Saliva**, by Kidwell, D.A., **NRL-MR-6678**, pp. 18, July 10, 1990, From NTIS as ADA-224173.

**Angle Recovery Circuit AOTA Heading Sensor**, by Bucholtz, F. and Patrick, S.S.\*, **NRL-MR-6759**, pp. 17, December 7, 1990, From NTIS as ADA-229983.

**The Application of Hopfield Neural Network Techniques to Problems of Routing and Scheduling in Packet Radio Networks**, by Wieselthier, J.E., Barnhart, C.M., Ephremides, A.\*, and Ephremides, A.\*, **NRL-MR-6730**, pp. 120, November 9, 1990, From NTIS as ADA-229039.

**Applying Formal Methods to the Analysis of a Key Management Protocol**, by Meadows, C.A., **NRL-9265**, pp. 38, September 19, 1990, From NTIS as ADA-227262.

**The Approach to Equilibrium in a Reflex Triode**, by Terry, R.E., Les, J.M., and Geary, J.L.\*, **NRL-MR-6616**, pp. 33, September 24, 1990, From NTIS as ADA-227330.

**Atomic and Plasma Surface Interactions in Accelerators and IFR Cells**, by Ali, A.W., in **NRL-MR-6681**, pp. 29-32, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226537.

**Aureole Lidar: Ground Based Measurement**, by Hooper, W.P., **NRL-MR-6623**, pp. 20, May 11, 1990, From NTIS as ADA-223207.

**Battle Engagement Area Simulator/Tracker**, by Boris, J.P., Picone, J.M., and Kolbe, R.\*, **NRL-MR-6705**, pp. 50, October 8, 1990, From NTIS as ADA-227525.

**Beam Conditioning Options for the ATA Multi-Pulse Experiment**, by Hubbard, R.F., Slinker, S.P., Fernsler, R.F., Joyce, G., and Ali, A.W., in **NRL-MR-6680**, pp. 21-24, August 31, 1990 *DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226404.

**Beam Conditioning Options for the ATA Multi-Pulse Experiment; NRL 1989 Beam Propagation Studies in Support of the ATA Multi-Pulse Propagation Experiment**, by Hubbard, R.F., Slinker, S.P., Fernsler, R.F., Joyce, G., and Ali, A.W., in **NRL-MR-6677**, pp. 25-28, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226443.

---

An \* identifies an author listed with an affiliation other than NRL.

**Beam Conditioning Techniques**, by Fernsler, R., Slinker, S., Hubbard, R., and Joyce, G., in **NRL-MR-6680**, pp. 4-8, August 31, 1990 *DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226404.

**Beam Propagation in Channels**, by Hubbard, R.F., Slinker, S.P., Taylor, R.D., Fernsler, R.F., Ali, A.W., Joyce, G., and Boris, P., in **NRL-MR-6677**, pp. 13-16, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226443.

**Beam Propagation in Channels (U)**, by Hubbard, R.F., Slinker, S.P., Taylor, R.D., Fernsler, R.F., Ali, A.W., Joyce, G., and Boris, P., in **NRL-MR-6675**, pp. 5-8, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226553.

**Beam Stability and Range Extension Predictions for the ATA Multi-Pulse Propagation Experiment**, by Slinker, S., Hubbard, R., Ali, A.W., Fernsler, R., Joyce, G., Taylor, R.D., and Boris, P., in **NRL-MR-6677**, pp. 4-8, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226443.

**Benchmarking the Connection Machine**, by Young, M.A., **NRL-9289**, pp. 25, November 21, 1990, From NTIS as ADA-229705.

**Bibliography of NRL Publications--1988**, by Pickenpaugh, E.A., **NRL-9251**, pp. 87, October 31, 1990.

**CAD/CAM Feasibility Study**, by Keuthan, L., **NRL-9271**, pp. 68, September 11, 1990, From NTIS as ADA-226554.

**Coherent MM Wave Radar Using Incoherent Transmitter**, by Lohrmann, D.R., **NRL-MR-6703**, pp. 32, August 21, 1990, From NTIS as ADA-226118.

**Combining Zero Doppler Filter Calculations with MTI Filter Calculations to Increase Computational Speed**, by Brockett, S.M., **NRL-MR-6638**, pp. 14, May 8, 1990, From NTIS as ADA-222468.

**Common-Mode Rejectors for Pulse Power Diagnostics**, by Mathew, J., **NRL-MR-6607**, pp. 30, February 15, 1990, From NTIS as ADA-218096.

**The Compatibility of Candidate Navy Decontaminating Solutions with Alkyd and Non-Skid Painted Surfaces**, by Matuszko, J.S. and Little, R.C., **NRL-MR-6621**, pp. 17, April 2, 1990, From NTIS as ADA-220422.

**Computational Investigation of Local Material Strength and Toughness on Crack Growth**, by Matic, P. and DeGiorgi, V.G., **NRL-MR-6591**, pp. 50, May 14, 1990, From NTIS as ADA-223189.

**Considerations in the Design and Development of a Human Computer Interaction Laboratory**, by Achille, L.B., **NRL-9279**, pp. 24, September 20, 1990, From NTIS as ADA-228700.

**Creation, Validation, Testing and Data Management of a Knowledge Base Designed for a Technician's Assister System for the AN/SQS-53B, Unit 26, Using a Fault Isolation System Shell**, by Molnar, J.A., **NRL-9296**, pp. 151, December 17, 1990, From NTIS as ADA-230781.

**Critique of Nondiffraction Beams**, by Sprangle, P. and Hafizi, B.\*, **NRL-MR-6615**, pp. 21, April 3, 1990, From NTIS as ADA-220722.

**The Design of a Parallel Access Main Memory (PAMM) DMS on the Butterfly**, by Rosenau, T.J., **NRL-9266**, pp., May 1, 1990.

**Determination of the Heat Dissipated From a Specimen Undergoing Cyclic Plasticity by a Hybrid Numerical/Experimental Method**, by Kirby, G.C. and Wong, A.K., **NRL-MR-6633**, pp. 38, May 14, 1990, From NTIS as ADA-221575.

**Development of a Hybrid Adaptive Beam-former**, by Lee, F.W., **NRL-9249**, pp. 25, February 28, 1990, From NTIS as ADA-219652.

**Diffraction Effects in Directed Radiation Beams**, by Sprangle, P. and Hafizi, B.\*, **NRL-MR-6609**, pp. 60, April 3, 1990, From NTIS as ADA-220785.



**Diffusion Fields in a Toroidal Conducting Shell of Circular Cross Section**, by Kapetanakis, C.A., Dialetis, D.\*, Len, L.K.\*, and Golden, J.\*, **NRL-MR-6719**, pp. 33, October 1, 1990, From NTIS as ADA-228021.

**DISPLAY3D - A Graphics Preprocessor for CHIEF**, by Siders, C.M. and Bolling, D.M.\*, **NRL-MR-6709**, pp. 91, December 27, 1990, From NTIS as ADA-231345.

**Distributed Bosonic States and Condensed Matter Fusion**, by Chubb, S.R. and Chubb, T.A.\*, **NRL-MR-6600**, pp. 21, February 1, 1990, From NTIS as ADA-217605.

**Dynamics of an Unsteady Diffusion Flame: Effects of Heat Release and Gravity**, by Oran, E. and Ellzey, J.L., **NRL-MR-6716**, pp. 20, September 27, 1990, From NTIS as ADA-227348.

**Early Time Structuring of VHANES: Preliminary Results**, by Huba, J.D., **NRL-MR-6701**, pp. 31, August 15, 1990, From NTIS as ADA-225477.

**The Effect of the Ionosphere on Radiowave Signals and System Performance**, by Goodman, J.M., Klobuchar, J.A.\*, Soicher, H.\*, and Joiner, R.G.\*, **IES-90**, pp. 570, May 3, 1990 *The Ionospheric Effects Symposium (IES '90)*, From NTIS as ADA-233797.

**Effect of Worst-Case Multiple Jammers on Coded FH/SSMA Systems**, by Geraniotis, E.\* and Geraniotis, E.\*, **NRL-MR-6688**, pp. 41, July 31, 1990, From NTIS as ADA-224911.

**The Effects of Wiggler Errors on Free Electron Laser Performance**, by Esarey, E., Marable, W.\*, and Tang, C.M., **NRL-MR-6597**, pp. 26, April 2, 1990, From NTIS as ADA-220421.

**Efficient Approaches for Report/Cluster Correlation in Multi-Target Tracking Systems**, by Uhlmann, J.K., Picone, J.M., and Zuniga, M.R., **NRL-9281**, pp. 14, December 31, 1990, From NTIS as ADA-231589.

**EINMUF: An HF MUF, FOT, LUF Prediction Program**, by Daehler, M., **NRL-MR-6645**, pp. 52, May 18, 1990, From NTIS as ADA-221577.

**Elastic Solutions in a Semi-Infinite Solid with an Ellipsoidal Inclusion**, by Sanday, S.C. and Yu, H.Y.\*, **NRL-MR-6583**, pp. 19, January 25, 1990, From NTIS as ADA-217063.

**ELBA - A Three Dimensional Particle Simulation Code**, by Krall, J., Joyce, G., and Slinker, S., in **NRL-MR-6681**, pp. 5-9, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226537.

**Electron Energy Deposition in O<sup>+</sup>**, by Taylor, R.D., Ali, A.W., and Slinker, S.P., in **NRL-MR-6675**, pp. 21-24, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226553.

**Elimination of Laser Prepulse by Relativistic Guiding in a Plasma**, by Sprangle, P., Esarey, E., and Zigler, A., **NRL-MR-6751**, pp. 15, November 27, 1990, From NTIS as ADA-229859.

**Enhancing Multidimensional Tree Structures Using a Bi-Linear Decomposition**, by Uhlmann, J.K., **NRL-9282**, pp. 12, November 19, 1990, From NTIS as ADA-229756.

**Erosion of Electron Beams in the RLA Accelerator**, by Hubbard, R.F., Joyce, G., and Slinker, S.P., in **NRL-MR-6681**, pp. 25-29, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226537.

**ESR Spectral Simulations of 4, 4-dimethyl-3-oxazolydinyloxy Substituted Stearic Acid Spin Labels in Dry and Aqueous Dimyristoyl and Diphytanoyl Phosphatidylcholine**, by Pace, M.D. and Masumura, S., **NRL-MR-6637**, pp. 16, March 8, 1990, From NTIS as ADA-221576.

**Estimation of the Time Of Arrival of Underwater Acoustic Signals by Spline Functions I: An Introduction**, by Chui, C.K., **NRL-MR-6572**, pp. 39, October 1, 1990, From NTIS as ADA-229300.

**Estimation of the Time of Arrival of Underwater Acoustic Signals by Spline Functions II: Algorithms for Noisy Data**, by Chui, C.K., **NRL-MR-6573**, pp. 53, October 1, 1990, From NTIS as ADA-227859.

**Euler's Theorem for Polynomials**, by Wardlaw, W.P., **NRL-MR-6605**, pp. 11, February 9, 1990, From NTIS as ADA-218148.

**Experiments With Unsteady, Free Surface, Three Dimensional Vortices in a Thermally Stable Stratified Fluid**, by Stewart, M.B., Stewart, M.B.\*, and Troesch\*, **NRL-MR-6630**, pp. 32, May 14, 1990, From NTIS as ADA-222088.

**Explicit State Vector Representation for Heteroassociative Memories**, by Uhlmann, J.K., **NRL-9283**, pp. 9, November 21, 1990, From NTIS as ADA-229757.

**Fiber Optic Feed**, by Stilwell, D., Parent, M.G., and Goldberg, L., **NRL-MR-6741**, pp. 48, November 6, 1990, From NTIS as ADA-229860.

**Field Evaluation of a Passive Sampling Device for Hydrazines in Ambient Air**, by Wyatt, J.R., Rose-Pehrsson, S.L., Taffe, P.A.\*, Brown, S.W.\*, Thurow, A.R.\*, and Travis, J.C.\*, **NRL-MR-6613**, pp. 91, April 6, 1990, From NTIS as ADA-221074.

**Foil Focusing for Transport and Conditioning**, by Fernsler, R., Hubbard, R., Slinker, S., and Boris, P.\*, in **NRL-MR-6680**, pp. 17-20, August 31, 1990 *DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226404.

**Foil Focusing of Electron Beams**, by Fernsler, R.F., Hubbard, R.F., and Slinker, S.P., **NRL-MR-6620**, pp. 36, March 14, 1990, From NTIS as ADA-219511.

**A Framework for the Detection of a Target of Unknown Velocity**, by Steiner, M.J., **NRL-9280**, pp. 38, September 27, 1990, From NTIS as ADA-227745.

**Free Electron Lasers**, by Tang, C.M., **NRL-MR-6753**, pp. 10, January 9, 1990, From NTIS as ADA-230817.

**Gas Hydrate and Acoustically Laminated Sediments. Potential Environmental Cause of Anomalously Low Acoustic Bottom Loss in Deep-Ocean Sediments**, by Max, M., **NRL-9235**, pp. 73, February 9, 1990, From NTIS as ADA-218418.

**General Forms and Properties of Zero Cross Correlation Radar Waveforms**, by Gerlach, K.R. and Kretschmer, F.F., **NRL-9120**, pp. 18, January 30, 1990, From NTIS as ADA-217779.

**The Hardware Interface for a DeeCO Touch Screen Terminal in a Technician Maintenance Application**, by Molnar, J.A. and Faletti, S.G.\*, **NRL-MR-6659**, pp. 18, May 30, 1990, From NTIS as ADA-223209.

**High Energy Laser Beam Pattern Analysis**, by Hall, G., **NRL-9275**, pp. 16, August 3, 1990, From NTIS as ADA-228016.

**High Power Microwaves for Defense and Accelerator Applications**, by Manheimer, W., **NRL-MR-6661**, pp. 75, June 11, 1990, From NTIS as ADA-223550.

**A High-Speed KDL-RAM File System for Parallel Computers**, by Rosenau, T.J., Severance, C.\*, and Pramanik, S.\*, **NRL-9259**, pp. 20, June 22, 1990, From NTIS as ADA-223352.

**Hydrodynamic Simulations of Beam-Generated Turbulence in Channels**, by Boris, J., Hubbard, R., Oran, E., Picone, J., and Slinker, S., in **NRL-MR-6677**, pp. 17-20, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226443.

**The Impact of the Three-Wave Instability on the Spiral Line Induction Accelerator**, by Krall, J. and Tang, C.M., **NRL-MR-6752**, pp. 16, November 23, 1990, From NTIS as ADA-229758.

**Incomplete Integrals of Cylindrical Functions**, by Miller, A.R., **NRL-MR-6339**, pp. 16, March 10, 1990, From NTIS as ADA-219512.

**Innovative Methodology for Canceling Contaminating Noise in Turbulent Fluid Flow Environments**, by Horne, M.P. and Handler, R.A., **NRL-MR-6683**, pp. 32, September 19, 1990, From NTIS as ADA-227028.

**InterFIS: A Natural Language Interface to the Fault Isolation Shell**, by Perzanowski, D. and Potter, B., **NRL-9299**, pp. 25, December 31, 1990, From NTIS as ADA-230780.

**An Introduction to Impulse Radar**, by Skolnik, M.I., **NRL-MR-6755**, pp. 51, November 20, 1990, From NTIS as ADA-229381.

**An Investigation into the Use of Hypermutation as an Adaptive Operator in Genetic Algorithms Having Continuous, Time-Dependent Nonstationary Environments**, by Cobb, H.G., **NRL-MR-6760**, pp. 23, December 11, 1990, From NTIS as ADA-229159.

**Key Physics Issues Affecting the Performance of Free Electron Lasers**, by Tang, C.M., Esarey, E., Ting, A., Sprangle, P., Hafizi, B.\*, and Marable, W.\*, **NRL-MR-6754**, pp. 49, December 20, 1990, From NTIS as ADA-229992.

**Laboratory Development of a Passive Sampling Device for Hydrazines in Ambient Air**, by Wyatt, J.R., Rose-Pehrsson, S.L., Taffe, P.A.\*, and Crossman, K.P.\*, **NRL-MR-6660**, pp. 24, May 30, 1990, From NTIS as ADA-222663.

**Laboratory Evaluation of a Colorimetric Hydrazine Dosimeter**, by Rose-Pehrsson, S.L., Wyatt, J.R., Crossman, K.P.\*, Carver, P.T.\*, and Thurow, A.\*, **NRL-MR-6668**, pp. 101, June 23, 1990, From NTIS as ADA-223208.

**A Logic for the Analysis of Cryptographic Protocols**, by Syverson, P.F., **NRL-9305**, pp. 20, December 31, 1990, From NTIS as ADA-230779.

**Manual Fire Suppression Methods on Typical Machinery Space Spray Fires**, by Leonard, J.T., Carhart, H.W., Budnick, E.K.\*, Ouellette, R.J.\*, Shanley, J.H.\*, and Saams, J.R.\*, **NRL-MR-6673**, pp. 124, July 31, 1990, From NTIS as ADA-225311.

**Material Capability for Transport of Unsymmetrical Dimethylhydrazine**, by Wyatt, J.R., Rose-Pehrsson, S.L., and Crossman, K.P.\*, **NRL-MR-6679**, pp. 42, July 13, 1990, From NTIS as ADA-224166.

**Measurements of Plasma-Neutralized Super Vacuum Currents in a Gyrotron Configuration**, by Black, W.M., Kinkead, A.K., Hardesty, D.L., Killian, K.W., Manheimer, W.M., Gold, S.H., Kirkpatrick, D.A.\*, and Sucy, M.\*, **NRL-MR-6595**, pp. 20, February 16, 1990, From NTIS as ADA-218505.

**Microcomputer Software Support Center Services and Capabilities**, by Microcomputer Software Support Center, **NRL-PUB-179-4820**, pp. 1, October 1990.

**Microwave Application of the Electromagnetic Beam Analyzer**, by DeRosa, J.L., Wieting, T.J., Peebles, D.L., Marshall, W.E., and Rosenstock, H.B., pp. 750-759, March 1, 1990 *Proceedings of the Fourth National Conference on High-Power Microwave Technology for Defense Applications - Volume 2 (U) - Held at Naval Postgraduate School, Monterey, CA.*

**Millimeter-Wave Gyroklystron Amplifier Experiment Using a Relativistic Electron Beam**, by Gold, S.H., Fliflet, A.W., Manheimer, W.M., Black, W.M., Kinkead, A.K., Hardesty, D.L., Kirkpatrick, D.A., and Sucy, M., **NRL-MR-6625**, pp. 32, March 8, 1990, From NTIS as ADA-221209.

**Missing Pulse Clutter Processing**, by Steiner, M.J. and Kretschmer, F., **NRL-9273**, pp. 23, August 31, 1990, From NTIS as ADA-226616.

**Mode Competition in the Quasioptical Gyrotron**, by Fliflet, A.W. and Ruyopoulos, S.\*, **NRL-MR-6532**, pp. 65, May 30, 1990, From NTIS as ADA-222181.

**Movable-Boundary Channel-Access Schemes for Integrated Voice/Data Networks**, by Wieselthier, J.E., Ephremides, A.\*, and Ephremides, A.\*, **NRL-MR-6706**, pp. 48, August 20, 1990, From NTIS as ADA-227331.

**Noise Effects Upon a Simple Timing Channel**, by Moskowitz, I.S., **NRL-MR-6740**, pp. 22, December 21, 1990, From NTIS as ADA-230818.

**Non Parametric Classification Using Learning Vector Quantization**, by LaVigna, A.\*, **NRL-MR-6707**, pp. 99, August 21, 1990, From NTIS as ADA-226259.

**Non-Maxwellian Electron Distribution Functions in Z-Pinch Plasmas**, by Pulsifer, P.E. and Whitney, K.G., **NRL-MR-6662**, pp. 58, July 27, 1990, From NTIS as ADA-224702.

**Nonlinear Modeling Tracker Dynamics of Gated Range with Application to Radar Range Resolution**, by Abed, E.H., **NRL-9264**, April 18, 1990.

**NRL 1989 Beam Propagation Studies in Support of the ATA Multi-Pulse Propagation Experiment**, by Hubbard, R.F., Ali, A.W., Boris, J.P., Fernsler, R.F., Joyce, G., Oran, E., Picone, J.M., Slinker, S.P., Boris, P.\*, and Taylor, R.D.\*, **NRL-MR-6677**, pp. 41, August 31, 1990, From NTIS as ADA-226443.

**NRL Beam Propagation Theory Studies in Support of SuperIBEX, PULSERAD, RADLAC PURE and DELPHI**, by Hubbard, R.F., Ali, A.W., Fernsler, R.F., Joyce, G., Lampe, M., Slinker, S.P., Boris, P.\*, and Taylor, R.D.\*, **NRL-MR-6675**, pp. 41, August 31, 1990, From NTIS as ADA-226553.

**NRL Compact Accelerator Theory Studies**, by Hubbard, R.F., Ali, A.W., Joyce, G., Krall, J., Slinker, S.P., Sprangle, P., Tang, C.M., Mako, F.\*, and Serafim, P.\*, **NRL-MR-6681**, pp. 45, August 31, 1990, From NTIS as ADA-226537.

**The NRL Plasma Physics Division Balanced Technology Initiative (BTI) Program in High Power Microwave Sources**, by Manheimer, W.M., Gold, S.H., Fliflet, A.W., Rhinewine, M., Kinkead, A.K., Hahn, T., and Bergeron, G., pp. 556-557, March 1, 1990 *Proceedings of the Fourth National Conference on High-Power Microwave Technology for Defense Applications - Volume 2 (U) - Held at Naval Postgraduate School, Monterey, CA.*

**The NRL Program in Phase-Locked High Power Gyrotron Oscillators**, by Manheimer, W.M., Gold, S.H., Fliflet, A.W., Black, W.M., Burke, J., Barnett, L., Kinkead, A.K., Hardesty, D.L., Sucy, M., Czarnaski, M., and Fischer, R., pp. 522-530, March 1, 1990 *Proceedings of the Fourth National Conference on High-Power Microwave Technology for Defense Applications - Volume 2 (U) - Held at Naval Postgraduate School, Monterey, CA,*

**NRL Studies of RLA Accelerator Physics**, by Joyce, G., Hubbard, R., and Fernsler, R., in **NRL-MR-6681**, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226537.

**Nuclear Fusion in a Solid via A Bose Bloch Condensate**, by Chubb, S.R. and Chubb, T.A.\*, **NRL-MR-6617**, pp. 15, March 5, 1990, From NTIS as ADA-219758.

**Numerical Simulation of Solar Coronal Magnetic Fields**, by Dahlburg, R.B., Antiochos, S.K., and Zang, T.A.\*, **NRL-MR-6715**, pp. 35, September 27, 1990, From NTIS as ADA-227283.

**Numerical Simulation of the Compressible Orszag-Tang Vortex II. Supersonic Flow**, by Picone, J.M. and Dahlburg, R.B., **NRL-MR-6690**, pp. 45, August 5, 1990, From NTIS as ADA-224913.

**Numerical Simulations of Flowfields in a Central-Dump Ramjet Combustor III. Effects of Chemistry**, by Kailasanath, K., Gardner, J.H., Boris, J.P., and Oran, E.S., **NRL-MR-6682**, pp. 53, July 23, 1990, From NTIS as ADA-224145.

**Numerical Simulations of the Structure of Supersonic Shear Layers**, by Oran, E., Kailasanath, K., and Farouk, B.\*, **NRL-MR-**

**6667**, pp. 41, July 20, 1990, From NTIS as ADA-224164.

**Observation of Harmonic Gyro-Backward-Wave Oscillation in a 100 GHz CARM Oscillator Experiment**, by McCowan, R.B., Sullivan, C.A., Gold, S.H., and Fliflet, A.W., **NRL-MR-6765**, pp. 22, February 16, 1990, From NTIS as ADA-232063.

**Ohmic Effects in Quasioptical Resonators**, by Hargreaves, T.A., Fischer, R.P., and McCowan, R.B., **NRL-MR-6726**, pp. 29, October 9, 1990, From NTIS as ADA-227549.

**On Free Products of Torsion Free Abelian Groups**, by Gaglione, A.M., **NRL-MR-6606**, pp. 16, February 23, 1990, From NTIS as ADA-218146.

**One Dimensional Translation Measurement of Speckle From Rough Rotating Objects in Ultraviolet Illumination**, by Light, B. and Trusty, G.L., **NRL-9293**, pp. 68, December 31, 1990, From NTIS as ADA-233719.

**Optical Turbulence Measurements During One Morning and Two Evening Transition Periods in a Desert Basin**, by Searles, S.K., Hart, G.A.\*, and Kunkel, K.E.\*, **NRL-9295**, pp. 14, December 31, 1990, From NTIS as ADA-230304.

**Optimal Hankel Norm Approximation and Rational Function Models Using Impulse Response Data**, by Ainsleigh, P.L. and Chui, C.K., **NRL-MR-6689**, pp. 33, December 27, 1990, From NTIS as ADA-231317.

**Overview of Beam Conditioning**, by Fernsler, R.F., Ali, A.W., Hubbard, R.F., Joyce, G., Slinker, S.P., and Boris, P.\*, **NRL-MR-6680**, pp. 36, August 31, 1990, From NTIS as ADA-226404.

**A Paradigm for Efficient Subset Recognition**, by Uhlmann, J.K., **NRL-MR-6718**, pp. 36, October 1, 1990, From NTIS as ADA-227694.

**Parallel Access Main Memory (PAMM) User's Manual, Version 1.0**, by Rosenau, T.J. and El-Kadi, M., **NRL-9267**, pp. 42, September 15, 1990, From NTIS as ADA-227743.

**Parametric and Non-Parametric Schemes for Discrete Time Signal Discrimination**, by Haimeri, J.A.\*, **NRL-MR-6739**, pp. 125, November 13, 1990.

**Passivity Mechanisms of Surfaces Produced by Ion Beam Mixing and Ion Implantation**, by Natishan, P.M., McCafferty, E., and Hubler, G.K., in **NRL-PUB-167-6320**, pp. 24, April 17, 1990.

**Performance Evaluation of Multi-Access Strategies for an Integrated Voice/Data CDMA Packet Radio Network**, by Geraniotis, E.\*, and Soroushnejad, M.\*, **NRL-MR-6743**, pp. 47, November 9, 1990.

**Perspectives on Modeling Electromagnetic Sea Scatter**, by Wetzel, L.B., **NRL-MR-6720**, pp. 16, September 28, 1990, From NTIS as ADA-226939.

**Phase Coded Waveforms and Range Super-resolution**, by Gabriel, W.F., **NRL-MR-6738**, pp. 23, November 5, 1990, From NTIS as ADA-229530.

**Physical and Computational Investigation of the Wall Pressure Fluctuations in a Channel Flow**, by Horne, M.P., **NRL-MR-6628**, pp. 173, April 26, 1990, From NTIS as ADA-221287.

**Plasma Instabilities in the High and Low Latitude E-Region Induced by High Power Radio Waves**, by Chaturvedi, P.K. and Ossakow, S.L., **NRL-MR-6712**, pp. 36, September 14, 1990, From NTIS as ADA-226617.

**Pseudo-Steady Diffusional Growth or Collapse of Bubbles Rising in Time-Dependent Pressure Fields**, by Griffin, O.M., Stewart, M.B., and Cerza, M., **NRL-MR-6584**, pp. 35, March 13, 1990, From NTIS as ADA-218825.

**Pulse Decoupling Using ATA**, by Fernsler, R., Slinker, S., and Hubbard, R., in **NRL-MR-6675**, pp. 117-20, August 31, 1990, *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226553.

**Purification of Metal Fluorides for the Ultra Low Loss Program**, by Ewing, K.J., **NRL-MR-6697**, pp. 14, August 6, 1990, From NTIS as ADA-224701.

**Reaction Propagation Studies in Beam-Initiated Confined Explosives**, by Stolovy, A., Kidd, J.M., and Namenson, A.I., **NRL-MR-6717**, pp. 19, October 8, 1990, From NTIS as ADA-228174.

**Reduction of Beam Breakup Growth by Cavity Cross-Couplings in Recirculating Accelerators**, by Lau, Y.Y., Colombant, D., and Chernin, D.\*, **NRL-MR-6671**, pp. 47, June 29, 1990, From NTIS as ADA-223553.

**Relativistic Klystron Amplifiers Driven by Modulated Intense Relativistic Electron Beams**, by Lau, Y.Y., Friedman, M., Krall, J., and Serlin, V., **NRL-MR-6627**, pp. 77, April 11, 1990, From NTIS as ADA-221075.

**Reynolds Stress and the Physics of Turbulent Momentum Transport**, by Handler, R.A. and Bernard, P.S.\*, **NRL-MR-6685**, pp. 51, July 19, 1990, From NTIS as ADA-224172.

**Sea Clutter**, by Wetzel, L.B., **NRL-9244**, pp. 42, September 28, 1990, From NTIS as ADA-227746.

**Sensitivity of Hose Instability to Frequency of Initial Perturbation in Low and Current Beams**, by Hubbard, R.F., Slinker, S.P., and Taylor, R.D., in **NRL-MR-6677**, pp. 21-24, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226443.

**Sensitivity of Hose Instability to Frequency of Initial Perturbation in Low and High Current Beams**, by Hubbard, R.F., Slinker, S.P., and Taylor, R.D., in **NRL-MR-6675**, pp. 13-17, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226553.

**Sensitivity Testing on a Theater-Based Automatic Data Fusion Algorithm**, by Hofmann, J.B., **NRL-MR-6687**, pp. 36, September 28, 1990, From NTIS as ADA-227574.

**Shear-Resistant Drag Reduction Polymers. Part I - Molecular Investigations of Polymer Drag Reduction and the Development of Laboratory Screening Methods**, by Kim, O.K. and Choi, L.S., **NRL-MR-6651**, pp. 24, May 14, 1990, From NTIS as ADA-223353.

**Shipboard Tests of Halon 1301 Test Gas Simulants**, by Fulper, C.R., Carhart, H.W., DiNenno, P.J.\*, Forssell, E.W.\*, Bank, G.G.\*, and Ouellette, R.J.\*, **NRL-MR-6708**, pp. 113, August 22, 1990, From NTIS as ADA-226258.

**Signal Coherence Recovery Using Acousto-optic Fourier Transform Architectures**, by Wood, K.S., Norris, J.P., and Smathers, H.W., **NRL-9214**, pp. 35, June 14, 1990, From NTIS as ADA-223354.

**Simulation Studies of a Klystronlike Amplifier Operating in the 10-100 GW Regime**, by Krall, J., Friedman, M., Lau, Y.Y., and Serlin, V., **NRL-MR-6750**, pp. 30, November 20, 1990, From NTIS as ADA-229853.

**Soft X-ray Emission Spectra from Laser-Irradiated High-Z Targets**, by Burkhalter, P.G., Ripin, B.H., Mehlman, G.\*, and Newman, D.A.\*, **NRL-MR-6674**, pp. 27, June 29, 1990, From NTIS as ADA-223552.

**Software Interface for the Touch Sensitive Menu of the Technician's Assister System**, by Molnar, J.A. and Faletti, S.G.\*, **NRL-MR-6768**, pp. 32, December 20, 1990, From NTIS as ADA-230246.

**Solid Rocket Propellant Initiation Via Particle Beam Heating**, by Stolovy, A., Namenson, A.I., and Kidd, J.M., **NRL-MR-6646**, pp. 24, May 17, 1990, From NTIS as ADA-221900.

**Solubility Interactions and the Design of Chemically Selective Sorbent Coatings for Chemical Sensors and Arrays**, by Grate, J.W. and Abraham, M.H., **NRL-MR-6692**, pp. 63, July 27, 1990, From NTIS as ADA-224957.

**Some Remarks on Solutions of Fermat's Last Equation in Terms of Wright's Hypergeometric Function**, by Vegh, E., Miller, A.R., and Wardlaw, W.P.\*, **NRL-MR-6601**, pp. 11, February 16, 1990, From NTIS as ADA-218066.

**The Stability and Structure of Lean Hydrogen-Air Flames: Effects of Gravity**, by Patnaik, G. and Kailasanath, K., **NRL-MR-6649**, pp. 19, May 17, 1990.

**Stability Regimes in a Helical Quadrupole Focusing Accelerator - Theory and Simulation**, by Krall, J., Tang, C.M., Joyce, G., and Sprangle, P., **NRL-MR-6636**, pp. 29, May 4, 1990, From NTIS as ADA-221755.

**Stability Regimes in a Rotating Quadrupole Focusing Accelerator**, by Tang, C.M., Sprangle, P., Krall, J., Serafim, P.\*, and Mako, F.\*, **NRL-MR-6589**, pp. 50, March 7, 1990, From NTIS as ADA-219513.

**Stability Regimes in a Rotating Quadrupole Focusing Accelerator**, by Krall, J., Mako, F., Serafim, P.\*, Sprangle, P., and Tang, C.M., in **NRL-MR-6681**, pp. 9-12, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226537.

**A Study of Confined Diffusion Flames**, by Oran, E.S., Ellzey, J.L.\*, and Laskey, K.J.\*, **NRL-MR-6704**, pp. 31, September 4, 1990, From NTIS as ADA-226552.

**A Suite of Weapon Assignment Algorithms for a SDI Mid-Course Battle Management**, by Hofmann, J.B., Metler, W.A.\*, and Preston, F.L.\*, **NRL-MR-6713**, pp. 27, September 19, 1990, From NTIS as ADA-229189.

**Superresolution Techniques and ISAR Imaging**, by Gabriel, W.F., **NRL-MR-6714**, pp. 65, September 21, 1990, From NTIS as ADA-227522.

**A Tandem Semantic Interpreter for Incremental Parse Selection**, by Wauchope, K., **NRL-9288**, pp. 50, September 28, 1990, From NTIS as ADA-227743.

**Tests of Initialization Procedures with the NRL Limited Area Numerical Weather Prediction Model**, by Madala, R.V. and Sashegyi, K.D.\*, **NRL-MR-6648**, pp. 91, June 29, 1990, From NTIS as ADA-223549.

**Texture Segmentation Using Localized Spatial Filtering**, by Du, L.J., **NRL-MR-6586**, pp. 39, January 26, 1990, From NTIS as ADA-218064.

**Three-Dimensional Simulations of Beam Transport and Emittance Growth in the Spiral Line Induction Accelerator**, in **NRL-MR-6681**, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226537.

**Three-Dimensional Simulations of Electromagnetically Stable and Unstable Regimes in the Spiral Line Induction Accelerator**, by Krall, J., Joyce, G., and Tang, C.M., in **NRL-MR-6681**, pp. 13-16, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226537.

**Time-Dependent Multimode Simulation of Gyrotron Oscillators**, by Fliflet, A.W., Gold, II., Manheimer, W.M., Lee, R.C.\*, and Ott, E.\*, **NRL-MR-6746**, pp. 36, November 21, 1990, From NTIS as ADA-229861.

**Transverse Two Stream Instability (U)**, by Joyce, G. and Lampe, M., in **NRL-MR-6675**, pp. 25-28, August 31, 1990 *1989 Annual DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226553.

**Vapor Stream Dilution by Pulse-Width Modulation**, by Grate, J.W. and Klusty, M., **NRL-MR-6762**, pp. 27, December 11, 1990, From NTIS as ADA-229158.

**Variable Projection Methods With Application to Sums of Exponentials in White Noise**, by Ainsleigh, P.L. and George, J.D.\*, **NRL-MR-6643**, pp. 115, December 27, 1990, From NTIS as ADA-231344.

**Wald Sequential Detection with Non-Gaussian Pulsed Radar Data Using the Zakai Equation**, by Rodriquez, S.P., **NRL-MR-6686**, pp. 93, July 20, 1990, From NTIS as ADA-224056.

**Welcome to ENEWS, NRL-PUB-141-5707**, January 1990.

**Wire Cells I: Vacuum**, by Fernsler, R., Slinker, S., and Boris, P.\*, in **NRL-MR-6680**, pp. 8-11, August 31, 1990 *DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226404.

**Wire Cells II: Gas**, by Slinker, S., Fernsler, R.F., and Hubbard, R.F., in **NRL-MR-6680**, pp. 12-16, August 31, 1990 *DARPA/SDIO/Services Charged Particle Beam Review*, From NTIS as ADA-226404.

**X-Ray Laser Program Final Report for FY89**, by Apruzese, J., Young, F.C., Dasgupta, A., Kepple, P.C., Buie, M., Thornhill, J.W., Giuliani, J.L., Whitney, K. G., Roelant, D.\*, and Coulter, M.C.\*, **NRL-MR-6622**, pp. 85, May 24, 1990, From NTIS as ADA-221818.



## 1990 Patents

**Adaptive Associative-Processing Optical Computing Architectures**, U.S. Patent 4, 862,406, Serial No. 823,719, Navy Case No. 69,520 to Arthur D. Fisher. Issued 29 August 1989.

**Adaptive MTI Target Preservation**, U.S. Patent No. 4,914,442, Serial No. 304,041, Navy Case No. 68,037, issued April 3, 1990 to Frank F. Kretschmer, Jr. and Bernard L. Lewis.

**Adaptive Phase-Shifter Nulling Techniques For Large-Aperture Phased Arrays**, U.S. Patent No. 4,937,584, Navy Case No. 70,538, issued 26 June 1990 to William F. Gabriel and Theodore C. Cheston. Serial No. 288,184.

**Apparatus and Method For Optimizing the Modulation Efficiency of a Remotely Located, Polarization-Sensitive, Integrated Optic Modulator Which is Addressed With a Nonpolarization Preserving Fiber**, U.S. Patent No. 4,968,110, Serial No. 07/472,934, Navy Case No. 71,610, issued 6 November 1990 to Catherine H. Bulmer, William K. Burns, and Alan D. Kersey.

**Apparatus and Method For Minimizing Polarization-Induced Signal Fading in An Interferometric Fiber-Optic Sensor Using Input Polarization Modulation**, U.S. Patent No. 4,932,783, Serial No. 383,390, Navy Case No. 71,465, issued 12 June 1990 to Alan D. Kersey and Michael J. Marrone.

**Apparatus and Method For Monitoring Pressure Leaks From a Sealed System**, U.S. Patent 4,939,926, Serial No. 361,074, Navy Case No. 69,639, issued July 10, 1990 to Jeanne A. Welch.

**Apparatus and Method For Minimizing Polarization-Induced Signal Fading in An Interferometric Fiber-Optic Sensor Using Input-Polarization Control**, U.S. Patent No. 4, 897,543, Serial No. 301,301 issued January 30, 1990 to Alan D. Kersey, Navy Case 70,942.

**Apparatus For the Efficient Wavelength Conversion of Laser Radiation**, U.S. Patent No. 4,907,238, Serial No. 370,965, Navy Case No. 71,350, issued March 6, 1990 to Myung K. Chun, Lew Goldberg, and Joseph F. Weller.

**Blood Substitute Comprising Liposome-Encapsulated Hemoglobin**, U.S. Patent No. 4,911,929, Serial No. 192,045, Navy Case No. 71,217, issued March 27, 1990 to Martha C. Farmer and Richard L. Beissinger.

**Narrow-Bandwidth Unstable Laser Resonator**, U.S. Patent No. 4, 868,515, Serial No. 260, 847, Navy Case No. 70, 830 to John F. Reintjes and David G. Cooper. Issued 19 September 1989.

**Fiber Optic Transversal Filter/Variable Delay Line**, U.S. Patent 4,976,518, Serial No. 07/406,440, Navy Case No. 68,590, issued 11 December 1990 to William K. Burns.

**Field Emitter Array Integrated Distributed Amplifiers**, U.S. Patent No. 4,901,028, Serial No. 171,706, Navy Case No. 70,437, issued February 13, 1990 to Henry F. Gray and Richard F. Greene.

**Formation of Epitaxial Si-Ge Heterostructures By Solid Phase Epitaxy**, U.S. Patent 4,975,387, Serial No. 07/450,963, Navy Case No. 72,382, issued 4 December 1990 to Sharks M. Prokes, Wen F. Tseng, and Aristos Christou.

**High Frequency, Frequency Multiplier Using Parallel Gunn Diodes**, U.S. Patent No. 4,978,928, Serial No. 07/501,571, Navy Case No. 69,755, issued 18 December 1990 to Mario Ancona.

**High Power Diamond Traveling Wave Amplifier**, U.S. Patent No. 4,929,986, Serial No. 101,919, Navy Case No. 70,119, issued May 29, 1990 to Max N. Yoder.

**High Resolution Technique and Instrument For Measuring Lattice Parameters in Single Crystals**, U.S. Patent No. 4,961,210, Serial No. 07/486,324, Navy Case No. 71,520, issued 2 October 1990 to Mohammad Fatemi.

**Immediate Write, Read, and Erase Optical Storage Medium and Method of Marking and Erasing**, U.S. Patent 4,975,358, Serial No. 07/422,723, Navy Case No. 71,753, issued 4 December 1990 to Mark F. Sonnenschein and Charles M. Roland.

**Integrated-Optic, Polarization-Selective Phase Modulator**, U.S. Patent No. 4,907, 849, Serial No. 233,519, Navy Case No. 71,424, issued March 13, 1990 to Alan D. Kersey, Catherine Bulmer, and Anthony Dandridge.

**Method For Detecting Amine-Containing Drugs in Body Fluids By Sims**, U.S. Patent No. 4,902,627, Serial No. 698,476, Navy Case No. 67,912, issued February 20, 1990 to David Kidwell.

**Method For Forming Copious ( $F_2^+$ ) Centers in Certain Stable, Broadly Tunable Laser-Active Materials**, U.S. Patent No. 4, 881,234, Serial No. 27,473, Navy Case No. 69,742 issued November 14, 1989 to David R. Foster and Irwin Schneider.

**Method For Making Holograms With Coherent Radiation From a Stabilized Laser Diode That Has Been Actively Cooled**, U.S. Patent No. 4,953,951, serial No. 07/143,492, Navy Case No. 70,564, issued 4 September 1990 to Gail C. Gilbreath and Anne E. Clement.

**Method of Making Self-Aligned GaAs/AlGaAs FETs**, U.S. Patent No. 4,927,782, Serial No. 371,778, Navy Case No. 68,092, issued May 22, 1990 to John E. Davey and Aristos Christou.

**Method of Preparing Superconducting "Orthorhombic"-Type Compounds in Bulk Using  $C_1$ - $C_6$  Alkanoic Acid Salts**, U.S. Patent No. 4,900,715, Serial No. 161,936, Navy Case No. 70, 861 issued February 13, 1990 to John C. Cooper, Ramanathan Panayappan, and Joseph T. Guy.

**Monolithic Laser Diode Structure For Microwave Generation**, U.S. Patent No. 4,907,234, Serial No. 347,132, Navy Case No. 69,951, issued March 6, 1990 to Lew Goldberg and Joseph F. Weller.

**Monolithic Multichannel Detector Amplifier Arrays and Circuit Channels**, U.S. Patent No. 4,924,285, Navy Case No. 71,406, issued May 8, 1990 to Gordon W. Anderson, John B. Boos, Harry B. Dietrich, David I. Ma, Ingham A. C. Mack, and Nicholas A. Papanicolaou.

**Multiband Photoconductive Detector Based On Layered Semiconductor Quantum Wells**, U.S. Patent 4,975,567, Serial No. 07/372,961, Navy Case No. 69,932, issued 4 December 1990 to Stephen G. Bishop and Benjamin V. Shanabrook.

**Noise-Suppressing Hydrophones**, U.S. Patent No. 4,928,264, Serial No. 373,979, Navy Case No. 69,719, issued May 22, 1990 to Manfred Kahn.

**Non-Destructively Measuring Local Carrier Concentration and Gap Energy in a Semiconductor**, U.S. Patent No. 4,953,983, Serial No. 07/172,921, Navy Case No. 70,381, issued 4 September 1990 to Nicholas Bottka, D. Kurt Gaskill, and Robert Glosser.

**Non-Reciprocal Semiconductor Device**, U.S. Patent 4, 862,119, Serial, No. 213,042, Navy Case No. 70,174 to Clifford M. Krowne, Gary A. Prinz, and James J. Krebs. Issued 29 August 1989.

**Optical Beamformers**, U.S. Patent 4, 862,115, Serial No. 155,434 Navy Case No. 69, 867 to John N. Lee, Ravindra A. Athale, and Peter B. Folsma. Issued 29 August 1989.

**Optical Communication System Having a Wide-Core Single-Mode Planar Waveguide**, U.S. Patent No. 4,961,618, Serial No. 07/361,078, Navy Case No. 71,271 issued to Arthur K. Jordan and S. Lakshmanasamy on 9 October 1990.

**Organic Vapor Assay By Raman Spectroscopy**, U.S. Patent No. 4, 886,358, Serial No. 200,324, Navy Case No. 70,567 issued December 12, 1989 to Robert E. Pellenbarg and David E. Tevault.

**Organometallic Antimony Compounds Useful in Chemical Vapor Deposition Processes**, U.S. Patent No. 4,960,916, Serial No. 07,415,505, Navy Case No. 71,063, issued 2 October 1990 to John C. Pazik.

**Passive Stabilization of a Fiber Optic Nonlinear Interferometric Sensor**, U.S. Patent No. 4, 881, 813, Serial No. 196,705, Navy Case No. 70,232 issued November 21, 1989 to Kee P. Koo, Frank Bucholtz, and Anthony Dandridge.

**Polybutadiyne Coated Carbon Fiber Reinforced Polymer Composites**, U.S. Patent No. 4,918,117, Serial No. 256,433, Navy Case No. 70,721, issued April 17, 1990 to Arthur Snow and James P. Armistead.

**Preparation of Ultra-Pure Metal Halides**, U.S. Patent No. 4,965,055, Serial No. 07/499, 843, Navy Case No. 70,121, issued 23 October 1990 to Paul E. R. Nordquist and Arnold H. Singer.

**Pressure Sensitive Optical Fiber Having Optimized Coatings**, U.S. Patent No. 4,979,798, Serial No. 07/423,176, Navy Case No. 70,434, issued 25 December 1990 to Nicholas Lagakos and Joseph A. Bucaro.

**Process For Fabricating Self-Aligned Field Emitter Arrays**, U.S. Patent No. 4,964,946, Serial No. 07/473,752, Navy Case No. 69,325, issued 23 October 1990 to Henry F. Gray and George J. Campisi.

**Programmable Analog Voltage Multiplier Circuit Means**, U.S. Patent No. 4,931,674, Serial No. 271, 820, Navy Case No. 70,779, issued June 5, 1990 to Francis J. Kub, Ingham A. Mack, and Keith K. Moon.

**Ring Laser Cavities**, U.S. Patent No. 4,905,252, Serial No. 245,176, Navy Case No. 70,247, issued February 27, 1990 to Lew Goldberg and Joseph F. Weller.

**Room-Temperature, Flashpumped, 2 Micron Solid State Laser With High Slope Efficiency**, U.S. Patent No. 4,969,154, Serial No. 07/455,031, Navy Case No. 72,360, issued 6 November 1990 to Leon Esterowitz, Gregory J. Quarles and Charles L. Marquardt.

**Room-Temperature, Laser Diode-Pumped, Q-Switched, 2 Micron, Thulium-Doped, Solid State Laser**, U.S. Patent No. 4,965, 803, Serial No. 07/501,461, Navy Case No. 72,611, issued 23 October 1990 to Leon Esterowitz and Robert C. Stoneman.

**Scandia-Stabilized Zirconia Coating For Composites**, U.S. Patent No. 4,913,961, Serial No. 199, 815, Navy Case No. 70,946, issued April 3, 1990, to Robert L. Jones and Robert P. Ingel.

**Self Moistening Composition For Deactivating Toxic Substances and Method of Use**, U.S. Patent No. 4,902,441, Serial No. 176,057, Navy Case No. 69,543, issued February 20, 1990 to Robert E. Pellenbarg and Homer W. Carhart.

**Substituted Silyl-Terminated Compounds and Polymers Thereof**, U.S. Patent No. 4,935,479, Serial No. 73,025, Navy Case No. 71,367, issued June 19, 1990 to Kreusler S.Y. Lau, Abraham F. Landis and Thomas K. Dougherty.

**Superconducting Neural Network Computer and Sensor Array**, U.S. Patent 4,943,556, Serial No. 252,486, Navy Case No. 70,683, issued July 24, 1990 to Harold H. Szu.

**Superconducting Optical Switch**, U.S. Patent No. 4,904, 882, Serial No. 289,295, Navy Case No. 71,685, issued February 27, 1990 to Harold H. Szu.

**System For Discharging and Otherwise Controlling Electric Charge On Objects Such as Aircraft in Flight**, U.S. Patent No. 4,980,795, Serial No. 07/282,187 issued 25 December 1990 to Charles S. Moore, Marx Brook, and Clyde Richards.

**Thulium-Doped Fluorozirconate Fiber Laser Pumped By a Diode Laser Source**, U.S. Patent No. 4,967,416, Serial No. 07/486,638, Navy Case No. 72,124, issued 30 October 1990 to Leon Esterowitz and Roger E. Allen.

**Tunable, Continuous Wave, Thulium Doped, Solid State Laser**, U.S. Patent 4,969,150, Serial No. 07/510,499, Navy Case No. 72,123, issued 6 November 1990 to Leon Esterowitz and Robert C. Stoneman.

**X-Ray Laser With Enhanced X-Ray Gain Through Photodepopulation**, U.S. Patent 4,942,580, Serial No. 414,499, Navy Case No. 70,336, issued July 17, 1990 to Raymond C. Elton.

**Yoked Orthogonally Distributed Equal Reactance Non-Coplanar Traveling Wave Amplifier**, U.S. Patent No. 4,914,743, Serial No. 95,487, Navy Case No. 69,852, issued April 3, 1990 to Max N. Yoder and Michael A. Morgan.

**Yoked, Orthogonally Distributed Equal Reactance Amplifier**, U.S. Patent 4,947,220, Serial No. 89,892, Navy Case No. 70,077, issued August 7, 1990 to Max N. Yoder.

# Author Index

- Aaronson, H.I. (23)  
 Abe, M. (44)  
 Abed, E.H. (37, 64)  
 Abraham, M.H. (66)  
 Abraham, P.B. (3)  
 Abrams, R.H. (17)  
 Achille, L.B. (60)  
 Adams, G.F. (7, 12)  
 Adams, J.H. (52)  
 Adams, R.H. (16)  
 Adenwalla, S. (4)  
 Adroja, D.T. (21)  
 Afzal, R.S. (21)  
 Aggarwal, I.D. (6-8, 10, 25, 26, 28-30)  
 Ahl, P.L. (6, 9)  
 Ahn, S. (32)  
 Aina, L. (14)  
 Ainsleigh, P.L. (1, 65, 67)  
 Akajor, C.E. (53)  
 Alexander, M.H. (12)  
 Alford, N.M. (31)  
 Ali, A.W. (34, 35, 59-61, 64, 65)  
 Allen, L.H. (49)  
 Allen, M. (5)  
 Allen, P.B. (38)  
 Allen, R. (26)  
 Allen, R.E. (72)  
 Alport, M. (17)  
 Aminabhavi, T.M. (2)  
 Ancona, M. (69)  
 Ancona, M.G. (14, 15, 17)  
 Anderson, D.E. (18, 56)  
 Anderson, G.W. (16, 25, 28, 70)  
 Anderson, O.L. (42)  
 Anderson, P.B. (12)  
 Anderson, W.T. (15-17, 44)  
 Andraka, B. (31)  
 Andreadis, T.D. (41, 48)  
 Andzelm, J. (31)  
 Antiochos, S.K. (53, 54, 56, 64)  
 Antoniadis, J. (17)  
 Antoniadis, J.A. (31)  
 Antonsen, T. (36)  
 Antonsen, T.M. (34)  
 Aprigliano, L. (30)  
 Apruzese, J. (68)  
 Apruzese, J.P. (19, 21, 33, 34, 36)  
 Armistead, J.A. (71)  
 Armstrong, C.M. (14, 15)  
 Armstrong, T. (55)  
 Arnett, S.L. (25)  
 Arnold, D.J. (42)  
 Arnold, D.V. (37)  
 Askins, C.G. (27)  
 Athale, R.A. (70)  
 Atzmony, U. (41)  
 Ayers, J.D. (14, 23)  
 Ayers, R.L. (20)  
 Bacalis, N.C. (51)  
 Bailyn, C.D. (53)  
 Baker, D.J. (12)  
 Baker, W.E. (15)  
 Bakhtiar, R. (27)  
 Balaram, H. (57)  
 Balaram, P. (11, 57, 58)  
 Bank, G.G. (66)  
 Banks, C. (14)  
 Barbee, T.W. (45)  
 Barger, M.S. (50)  
 Barger, W.R. (10, 11)  
 Barnes, C.E. (27)  
 Barnett, L. (64)  
 Barnhart, C.M. (59)  
 Baronavski, A.P. (7, 10)  
 Barrera, E.V. (41)  
 Barsanti, M.L. (35, 36)  
 Bartoli, F. (46)  
 Bartoli, F.J. (27, 28, 38, 40, 42, 44-46, 51)  
 Bass, R. (41)  
 Bassel, R.H. (48)  
 Batra, N.K. (52)  
 Beal, E.J. (9)  
 Beall, J.H. (53, 54)  
 Beary, E.S. (7)  
 Behroozi, F. (10, 31)  
 Beissinger R.L. (69)  
 Bell, R. (17)  
 Bell, R.E. (17)  
 Bello, P.A. (15)  
 Benachenhau, D. (13)  
 Bender, B.A. (7, 41)  
 Bennett, L.H. (41)  
 Benson, J.M. (53)  
 Bentley, R.D. (54)  
 Beresford, R. (45)  
 Bergeron, G. (16, 64)  
 Berko, S. (51)  
 Berman, D.H. (2)  
 Bermudez, V. (57)  
 Bermudez, V.M. (9, 42, 43, 48)  
 Bernard, P.S. (66)  
 Bernetich, K.R. (48)  
 Bernhardt, P.A. (5)  
 Bernier, G. (16)  
 Berry, A.D. (24)  
 Berry, A.K. (48)  
 Besuden, T.W. (3)  
 Beumel, L.L. (30)  
 Bevilacqua, R.M. (5)  
 Bey, P.P. (46)  
 Bhalla, A.S. (2)  
 Bishop, S.G. (46-48, 70)  
 Black, B.H. (8, 10)  
 Black, W.M. (15, 35, 63, 64)  
 Blackburn, J. (27)  
 Blaha, M. (34, 36)  
 Blanco, J.R. (50)  
 Blue, J.E. (1-4)  
 Bluem, H. (18, 20)  
 Boerio-Goates, J. (9)  
 Bogan, D.J. (10)  
 Boller, J.R. (16, 36)  
 Bolling, D.M. (61)  
 Book, D.L. (31)  
 Booker, L.B. (3, 4)  
 Boos, J.B. (43, 70)  
 Booske, J.H. (18)  
 Borgiotti, G.V. (1)  
 Boris, J. (62)  
 Boris, J.P. (14, 32, 59, 64)  
 Boris, P. (60, 62, 64, 65, 68)  
 Borsuk, G.M. (16)  
 Bottka, N. (14, 48, 70)  
 Bowden, G. (50)  
 Bowers, P.F. (55)  
 Bowman, A.P. (19)  
 Bowman, S.R. (19)  
 Boyd, D. (17)  
 Boyer, L.L. (40, 47, 49, 50)  
 Bradie, B. (41)  
 Brambani, L.A. (28)  
 Brandenstein, D.C. (56)  
 Brandow, S.L. (46)  
 Brauer, B.E. (10)  
 Bray, A.V. (25)  
 Bredehorst, R. (6)  
 Brenner, D.W. (8-10, 12, 44)  
 Brizzolara, R.A. (18, 46)  
 Broberg, J.B. (20)

- Brockett, S.M. (60)  
 Broido, D.A. (45, 49, 50)  
 Brook, M. (71)  
 Broughton, J. (42)  
 Broughton, J.Q. (38, 50)  
 Brower, D.T. (6)  
 Brown, C.M. (37)  
 Brown, D.B. (16)  
 Brown, D.E. (28)  
 Brown, S.W. (62)  
 Browning, V. (31)  
 Browning, V.M. (32, 42)  
 Brozena, J. (17)  
 Brozena, J.M. (17)  
 Brueckner, G.E. (55)  
 Bucaro, J.A. (2, 28, 71)  
 Bucholtz, F. (18, 21, 26, 28, 29, 59, 71)  
 Buckingham, M.J. (1)  
 Budnick, E.K. (63)  
 Budzien, S.A. (56)  
 Buie, M. (68)  
 Bulmer C.H. (69)  
 Bulmer, C. (70)  
 Bulmer, C.H. (26)  
 Buot, F.A. (16, 30, 40, 44, 46, 47)  
 Burke, J. (64)  
 Burkhalter, P.G. (36, 66)  
 Burkhart, G.R. (35, 54)  
 Burnham, N.A. (22, 32, 46)  
 Burns W.K. (69)  
 Burns, J. (39)  
 Burns, W.K. (26, 27, 29, 30)  
 Burton, K.A. (10)  
 Busse, L. (28, 30)  
 Busse, L.E. (26, 29)  
 Bussmann, U. (50)  
 Butler, J.E. (9, 10, 28, 30, 34, 42, 43, 48, 50)  
 Butler, J.W. (39)  
 Button, T.W. (31)  
 Cader, M. (13)  
 Calavita, M.M. (55)  
 Caldwell, N.J. (12)  
 Callcott, T.A. (32)  
 Calvert, J. (31)  
 Cammarata, R.C. (23, 32, 38, 45)  
 Campbell, A.B. (41, 46)  
 Campbell, P.M. (44)  
 Campillo, A.J. (8, 18, 22, 25-28, 30, 32, 33, 38)  
 Campisi, G.J. (44, 50, 52, 71)  
 Candela, G.A. (32)  
 Candella, G. (41)  
 Cantrell, B.H. (37)  
 Capps, R.N. (1, 30)  
 Carhart, H.W. (25, 63, 66, 71)  
 Carlone, C. (16)  
 Carlos, W.E. (45)  
 Carosella, C.A. (42, 48, 51)  
 Carr, G.L. (30)  
 Carrington, W.A. (43, 50)  
 Carroll, T.L. (30, 33, 38)  
 Carruthers, G. (54)  
 Carruthers, G.R. (53, 56)  
 Carruthers, T.F. (19, 20)  
 Carter, F.L. (15)  
 Carter, W.H. (27, 29, 38)  
 Carver, P.T. (63)  
 Cassady, C.J. (9, 11)  
 Cassidy, P.E. (2)  
 Caulfield, J.T. (28)  
 Celii, F.G. (10, 28, 34, 40, 50)  
 Cerza, M. (30, 65)  
 Chaiken, A. (45, 46)  
 Chambers, G.P. (25, 33, 39, 50)  
 Chandrasekhar, I. (6)  
 Chang, E. (30)  
 Chang, E.L. (10)  
 Chang, J.H. (35, 36)  
 Chang, L.W. (3, 4)  
 Chang, S. (5)  
 Charles, P.T. (6)  
 Chase, M. (47)  
 Chase, M.T. (49)  
 Chaskelis, H.H. (4, 52)  
 Chaturvedi, P.K. (5, 65)  
 Chaudhuri, J. (39)  
 Chen, J. (5, 30, 34, 35, 53, 54)  
 Chen, J.C. (17)  
 Chen, M.H. (34)  
 Cheng, C.C. (56)  
 Chern, C.H. (39, 40)  
 Chernin, D. (66)  
 Cheston T.C. (69)  
 Cheston, T.C. (37)  
 Choi, L.S. (66)  
 Chou, W.C. (39)  
 Chow, G.M. (38, 45)  
 Chrissey, D.B. (25, 43)  
 Christoloveanu, S. (39)  
 Christou, A. (15-17, 44, 49, 50, 69, 70)  
 Chu, N.C. (37)  
 Chu, X. (40)  
 Chubb, S.R. (29, 61, 64)  
 Chubb, T.A. (29, 61, 64)  
 Chui, C.K. (62, 65)  
 Chun M.K. (69)  
 Chun, M.K. (19, 21)  
 Chung, Y.C. (10)  
 Clark, A.V. (4)  
 Clark, R. (36)  
 Clark, R.W. (34)  
 Clement, A.E. (20, 28, 70)  
 Cliff, R.O. (6)  
 Cobb, H.G. (63)  
 Cochran, F.L. (34, 36)  
 Coffey, S. (22, 56)  
 Cohen, R.E. (38-40, 42, 44, 48, 49, 51)  
 Cohn, H. (53)  
 Cohn, J.L. (42)  
 Collins, M.D. (1, 3)  
 Collins, W.C. (20)  
 Colombant, D. (35, 66)  
 Colombant, D.G. (20, 29, 34, 35)  
 Colton, R.J. (8, 18, 22, 31, 32, 44, 46)  
 Commisso, R.J. (16, 36)  
 Conway, R.R. (56)  
 Conway, R.W. (17, 56)  
 Cook, D.C. (31)  
 Cook, J.W. (27, 42, 46, 55)  
 Cooper D.G. (69)  
 Cooper, D.G. (29)  
 Cooper, K.D. (23)  
 Cooperstein, G. (16)  
 Correll, F.D. (42)  
 Corsaro, R.D. (1)  
 Cory, D.G. (9-11, 18, 44, 46, 51)  
 Cotell, C.M. (23)  
 Coudert, L.H. (11)  
 Coulter, M.C. (35, 68)  
 Courtney, T.H. (24)  
 Covey, J.F. (1)  
 Creighton, J.O. (56)  
 Crepeau, P.J. (12)  
 Crockett, A.G. (38)

- Croft, M. (30)  
 Crooker, T.W. (23)  
 Cross, J.B. (42)  
 Crossman, K.P. (63)  
 Crowe, C.R. (22-24)  
 Crowley, J.L. (50)  
 Cukauskas, E.J. (45, 49)  
 Culbertson, J.C. (30)  
 Culbertson, R.J. (40)  
 Cutler, R.I. (20)  
 Cynn, H. (42)  
 Czarnaski, M. (16, 64)  
 Dacol, D.K. (1, 2)  
 Daehler, M. (5, 61)  
 Dagata, J.A. (10, 11)  
 Dagenais, D.M. (18, 21, 28, 29)  
 Dahlberg, J.P. (17)  
 Dahlburg, R.B. (17, 31, 52, 56, 64)  
 Dandridge, A. (18, 25, 26, 28, 59, 70, 71)  
 Dantsker, E. (24)  
 Das, B.N. (4, 24, 31, 47)  
 Dasgupta, A. (32, 68)  
 Dave, P.R. (58)  
 Davey, J.E. (70)  
 Davidson, F.M. (26)  
 Davis, J. (21, 33, 34, 36, 37)  
 Davis, J.L. (15, 40, 42)  
 Davis, N.R. (3)  
 Deanhardt, M.L. (8)  
 Debenham, P.H. (20)  
 Deeney, C. (33)  
 Degiorgi, V.G. (22, 24, 60)  
 DeJong, K. (4)  
 DeJong, K.A. (4)  
 Deland, M.T. (5)  
 DeLeo, G.G. (47)  
 Delsanto, P.P. (4, 52)  
 Denisson, C. (55)  
 Denney, P.E. (23, 24)  
 Deprit, A. (13, 22, 56)  
 Deprit, E. (13, 22, 56)  
 DeRosa, J.L. (63)  
 DeSilva, A.W. (35)  
 DeSisto, W.J. (39)  
 DeVore, C.R. (53, 54)  
 Dexter, J.L. (29)  
 Diachok, O. (2)  
 Dialetis, D. (35, 36, 61)  
 Dicus, R. (2, 3)  
 Dietrich, H. (15)  
 Dietrich, H.B. (38, 39, 45, 49, 70)  
 DiLella, D.P. (46)  
 Dimoulas, A. (48)  
 DiNunno, P.J. (66)  
 Dobisz, C.R.K. (44)  
 Dobisz, E.A. (31, 49)  
 Dobrowolska, M. (43-45)  
 Dodd, R.A. (23)  
 Dominguez, D.D. (32)  
 Dong, Q.Y. (32)  
 Donovan, E.P. (42, 48, 51)  
 Doschek, G.A. (34, 52, 54, 55)  
 Dotani, T. (53, 55)  
 Dote, J.L. (10, 11)  
 Dou, Q. (27)  
 Doubleday, C. (8)  
 Dougherty, T.K. (71)  
 Douglass, C.H. (8)  
 Dowling, J.A. (27)  
 Dragonette, L.R. (4)  
 Drake, J.F. (5, 35)  
 Du, L.J. (18, 67)  
 Dubbelday, P.S. (39)  
 Dubour, R.J. (53)  
 Duesbery, M.S. (32)  
 Duffey, M.T. (32)  
 Dufton, P.L. (34)  
 Duling, I.N. (19, 20, 27)  
 Duncan, L.M. (5)  
 Duncan, M.D. (25, 26, 28, 29, 33)  
 Dunlap, B.I. (10, 31, 33, 44)  
 Dunyak, J.P. (1)  
 Dusenbery, P.B. (5)  
 Dutt, D.A. (38, 47)  
 Eckardt, R. (19)  
 Edelstein, A. (4)  
 Edelstein, A.S. (21, 23, 30-32, 38, 41, 45, 51)  
 Ederer, D.E. (32)  
 Edwardson, P.J. (47)  
 Efthimiopoulos, T. (44)  
 Eftis, J. (22)  
 Ehni, P.D. (49)  
 Ehrenfeuchter, P. (28)  
 Ehrlich, A.C. (38)  
 Ekberg, J.O. (37)  
 El-Kadi, M. (65)  
 Elam, W.T. (40, 41, 43, 50, 52)  
 Elert, M.L. (9, 12)  
 Ellis, R. (17)  
 Ellzey, J.L. (8, 61, 67)  
 Elton, R.C. (33, 36, 72)  
 Engelhardt, M.A. (46)  
 Ephremides, A. (12, 59, 64)  
 Eridon, J.E. (25)  
 Eridon, J.M. (15, 33, 38, 44)  
 Erwin, S.C. (40, 41)  
 Esarey, E. (19, 20, 34-36, 61, 63)  
 Esman, R.D. (15, 28)  
 Esterowitz, L. (19-21, 26)  
 Esterwitz, L. (71, 72)  
 Ethimiopoulos, T. (15)  
 Evans, R.B. (3)  
 Everett, R.K. (31)  
 Eversole, J.D. (18, 25-28, 30, 32, 33)  
 Ewbank, J.D. (27)  
 Ewing, J.A. (55)  
 Ewing, K.J. (7, 8, 10, 12, 66)  
 Ezekiel, S. (29)  
 Fabian, J.M. (56)  
 Fahey, J.V. (8)  
 Faletti, S.G. (62, 66)  
 Fare, T.L. (8, 9, 30)  
 Farmer M.C. (69)  
 Farouk, B. (64)  
 Fatemi, M. (17, 24, 39, 42, 70)  
 Faurie, J.P. (40)  
 Faust, W.L. (27)  
 Fay, J.J. (9)  
 Fayeulle, S. (31, 49)  
 Fedder, J.A. (5, 56)  
 Feigl, F.J. (47)  
 Feldman, B.J. (19, 21)  
 Feldman, J.L. (38, 45)  
 Feldman, P.D. (56)  
 Feldman, U. (34, 37, 52, 54, 55)  
 Feng, C.R. (23, 24, 39, 49)  
 Fenimore, E.E. (56)  
 Fernsler, R. (34, 60, 62, 64, 66, 68)  
 Fernsler, R.F. (59, 60, 62, 64, 65, 68)  
 Feuerman, M. (22)  
 Feuerstein, G. (6)  
 Finn, J.M. (53)  
 Fischer, J. (54, 56)  
 Fischer, R. (64)  
 Fischer, R.P. (35, 36, 65)  
 Fisher A.D. (69)

- Fisher, A.D. (29)  
 Fitzgerald, J.W. (4)  
 Fleming, J.W. (7, 10)  
 Flick, T.E. (22)  
 Fliflet, A.W. (14, 15, 34-36, 63-65, 67)  
 Flippen-Anderson, J.L. (57, 58)  
 Fludra, A. (54)  
 Folsma, P.B. (70)  
 Forchel, A. (49, 50)  
 Ford, R.D. (8, 16)  
 Forssell, E.W. (66)  
 Foster, D.R. (70)  
 Fotiadis, L. (44)  
 Foukal, P. (56)  
 Fox, R.B. (9)  
 Fraedrich, D.S. (27)  
 Francavilla, T.L. (21, 32, 47)  
 Frank, J. (37)  
 Freitas, J.A. (18, 46-48)  
 Freund, H.P. (16, 20, 33, 35)  
 Frick, G.M. (4, 5, 32)  
 Friebele, E.J. (26-29, 38, 49)  
 Friedman, M. (14, 30, 33, 36, 66)  
 Fritz, G.G. (56)  
 Froscher, J.N. (13)  
 Fuller, W.W. (31, 40)  
 Fulper, C.R. (66)  
 Furdyna, J.K. (43-45, 50)  
 Fusina, R. (20, 48)  
 Gaber, B.P. (6)  
 Gabriel W.F. (69)  
 Gabriel, W.F. (38, 65, 67)  
 Gaglione, A.M. (65)  
 Galloway, A. (1)  
 Gammon, D. (40, 41, 50)  
 Gammon, D.A. (47)  
 Gammon, D.G. (43, 45, 50)  
 Ganguli, G. (5)  
 Ganguli, S.B. (5)  
 Ganguly, A.K. (15, 16, 31-33, 35)  
 Garcia, M.R. (53)  
 Gardes, J.W. (16)  
 Gardner, J.H. (29, 31, 54, 64)  
 Garino, T. (7)  
 Garland, E.W. (9)  
 Garland, N.L. (7)  
 Garling, D. (13)  
 Garroway, A.N. (9-11, 18, 44, 46, 51)  
 Gaskill, D.K. (14, 24, 40, 48, 70)  
 Gaume, R. (55)  
 Geary, J.L. (59)  
 Geil, F.G. (2)  
 Georgakilas, A. (48)  
 George, C. (58)  
 George, J.D. (1, 67)  
 Geraniotis, E. (61, 65)  
 Gerber, K.A. (35)  
 Gerlach, K.R. (62)  
 Giallorenzi, T.G. (29)  
 Gibson, J.W. (17)  
 Gilardi, R. (58)  
 Gilbreath, G.C. (26, 28, 70)  
 Gileadi, E. (24)  
 Giles, C.L. (13)  
 Gill, S.J. (23, 49)  
 Gillespie, D.J. (38)  
 Gilmore, C.M. (41)  
 Gingerich, M.E. (27, 28)  
 Ginther, R.J. (26, 40)  
 Giuliani, J.L. (19, 33, 36, 68)  
 Glaser, E. (39, 40, 47)  
 Glaser, E.R. (47)  
 Glass, A.S. (43)  
 Glembocki, O.J. (39, 40, 44, 45, 48)  
 Glosser, R. (48, 70)  
 Godbey, D.J. (30, 46, 48)  
 Godlove, T.F. (20)  
 Goins, B. (6)  
 Gold, S.H. (14, 15, 34, 35, 63-65)  
 Goldberg L. (69)  
 Goldberg, A.J. (37)  
 Goldberg, L. (19, 21, 27, 28, 62, 69-71)  
 Golden, J. (35, 36, 61)  
 Golden, J.P. (38)  
 Goldenberg, S.S. (48)  
 Goldhar, J. (20)  
 Goldstein, J.A. (4, 15)  
 Goodman, J.M. (5, 15, 61)  
 Goodrich, P.J. (36)  
 Gordon, W.B. (37)  
 Gossett, C.R. (15, 43, 44)  
 Gotwols, B.L. (37, 38)  
 Gover, R.E. (37)  
 Grabowski, K.S. (25, 33, 41, 43)  
 Gragg, R.F. (2)  
 Graham, M.J. (23)  
 Granatstein, V.L. (14, 15, 18, 34)  
 Grant, R.L. (28)  
 Grate, J.W. (11, 66, 67)  
 Gray, H.C. (69, 71)  
 Gray, H.F. (31)  
 Gray, J.W. (13)  
 Greene, R.F. (69)  
 Grefenstette, J.J. (4)  
 Gridley, C.J. (28, 29)  
 Griffin, O.M. (65)  
 Griffin, R.D. (13)  
 Grinstein, F.F. (32)  
 Griscom, D.L. (40, 42, 49)  
 Gross, C. (56)  
 Grossmann, J.M. (36)  
 Gruetzmacher, D. (50)  
 Grunes, M.R. (18)  
 Guan, L. (56)  
 Gubser, D.U. (31, 43, 48, 52)  
 Guirguis, R. (8)  
 Gutschewski, G. (56)  
 Guy, J.T. (70)  
 Haas, G.A. (17)  
 Hafizi, B. (19, 21, 60, 63)  
 Haftel, M.I. (29, 30)  
 Hagelstein, P.L. (34)  
 Hahn, T. (64)  
 Haimerl, J.A. (65)  
 Hall, G. (62)  
 Hall, S.A. (18)  
 Hamilton, M.C. (29)  
 Han, J.W. (27, 46)  
 Hand, C.W. (10)  
 Handler, R.A. (22, 63, 66)  
 Hanley, S.T. (27)  
 Hanratty, M.A. (28)  
 Hansen, G.J. (7)  
 Hanssen, L.M. (42, 50)  
 Harbison, B. (28)  
 Hardesty, D.L. (15, 35, 63, 64)  
 Hardy, D.R. (9, 10)  
 Hardy, H.D. (12)  
 Harford, M. (30)  
 Hargreaves, T.A. (35, 36, 65)  
 Harrington, C.C. (27, 28)  
 Harris, M.J. (54)  
 Harris, V.G. (40)  
 Harrison, J.G. (46)  
 Hart, G.A. (27, 65)  
 Hart, P. (10, 25, 28, 30)  
 Hart, S.D. (48)  
 Hartman, J.S. (43)



- Harvey, D.P. (22)  
 Hassam, A.B. (35, 37)  
 Hasson, D.F. (22)  
 Hastings, J.B. (21)  
 Hatzopoulos, Z. (15, 44, 48)  
 Hauge, R.H. (11)  
 Haxby, W.F. (17)  
 Hazlett, R.N. (9, 10)  
 Heald, S.M. (40, 41)  
 Healy, L. (22, 56)  
 Heckathorn, H.M. (53)  
 Hein, R.A. (32)  
 Hemment, P.L.F. (50)  
 Henriquez, T.A. (4)  
 Henry, R.L. (39, 49)  
 Henschel, H. (27)  
 Heppke, G. (12)  
 Heremans, J.P. (28, 46)  
 Herman, C. (22, 28)  
 Herman, M.I. (17)  
 Hertz, P. (52, 53, 55)  
 Hertz, P.L. (53)  
 Hickey, S.J. (27, 28)  
 Hickman, T.R. (28)  
 Higby, P.L. (26)  
 Hilfer, G. (28)  
 Hines, J.H. (2)  
 Hinshelwood, D.D. (16, 36)  
 Hobbs, R.M. (17)  
 Hochst, H. (46)  
 Hoff, H.A. (30, 32, 38, 40, 42, 43, 45, 47)  
 Hoffbauer, M.A. (42)  
 Hoffman, C.A. (27, 28, 38, 40, 42, 44-46, 51)  
 Hofmann, J.B. (66, 67)  
 Hogan, K. (15)  
 Hogan, K.M. (15)  
 Holland, O.W. (49)  
 Hollinger, J.P. (18, 56)  
 Holm, R.T. (24)  
 Holt, T. (5)  
 Holtz, R.L. (38, 41, 45)  
 Homeny, J. (7)  
 Hooper, W.P. (59)  
 Hoppel, W.A. (4, 5, 32)  
 Horne, M.P. (63, 65)  
 Horwitz, J. (10)  
 Horwitz, J.S. (11, 43, 57)  
 Houston, B.H. (2)  
 Howell, P.R. (24)  
 Howell, W.E. (38)
- Hsu, D.S.Y. (10, 11)  
 Huang, C.Y. (54)  
 Huba, J.D. (5, 35, 37, 61)  
 Hubbard, R.F. (66)  
 Hubbard, R. (60, 62, 64, 66)  
 Hubbard, R.F. (34, 59-62, 64-66, 68)  
 Hubler, G.K. (23, 42, 48, 51, 65)  
 Hues, S.M. (8)  
 Hughes, H. (32, 49)  
 Hughes, H.L. (30, 39, 43, 51)  
 Hughes, P.K. (37)  
 Hugo, R. (5)  
 Humphries, S. (31)  
 Hung, H.L. (15)  
 Hunter, W.R. (45)  
 Hussey, R.J. (23)  
 Huston, A.L. (20, 22, 26, 28, 30, 32, 33)  
 Hutchison, B.L. (25)  
 Hutson, F.L. (11)  
 Hutter, D.J. (55)  
 Ibe, J.P. (46)  
 Idzerda, Y.U. (43, 50)  
 Iliadis, A.A. (50)  
 Imam, M.A. (24, 48)  
 Imamura, J.N. (54)  
 Indritz, D. (11)  
 Ingel, R.P. (7, 71)  
 Ioannou, D.E. (39)  
 Isaak, D.G. (38, 42)  
 Itoh, T. (44)  
 Jackson, K. (38, 41, 46)  
 Jackson, K.A. (17, 41)  
 Jackson, R.H. (18, 20)  
 Jacob, R.J.K. (13)  
 Jacobs, V.L. (34)  
 Jaganathan, J. (7)  
 Jai, J. (32)  
 Jansen, R.W. (51)  
 Jarrell, M. (47)  
 Jarvis, J.L. (18)  
 Jenkins, D.J. (16)  
 Jensen, D.B. (16)  
 Jensen, K.L. (16, 40, 44, 46)  
 Jessen, T.L. (6, 7)  
 Jessup, A.T. (18, 37)  
 Jewell, J.M. (26)  
 Jha, S.S. (39)  
 Jin, W. (49)  
 Johan, A. (27)  
 Johnson, B.C. (20)  
 Johnson, E.D. (21)
- Johnson, G.L. (18)  
 Johnson, R.G. (20)  
 Johnston, K.J. (52, 55, 56)  
 Joiner, R.G. (5, 61)  
 Jolles, M.I. (22, 24)  
 Jones, D.A. (8)  
 Jones, H.N. (24)  
 Jones, L.K. (22)  
 Jones, R.L. (11, 71)  
 Jonker, B.T. (14, 31, 39, 43, 46, 47, 50, 51)  
 Joos, B. (32)  
 Jordan, A.K. (14, 27, 70)  
 Joyce, G. (35, 59-61, 64, 65, 67)  
 Joyner, K. (48)  
 Jurkevich, I. (52)  
 Justus, B.L. (8, 22, 26, 38)  
 Kabler, M.N. (48, 51)  
 Kafafi, Z.H. (11)  
 Kahn, M. (6, 7, 47, 49, 70)  
 Kailasanath, K. (8, 64, 67)  
 Kallgren, D.G. (12)  
 Kampe, J.C. (23)  
 Kampe, J.C.M. (24)  
 Kania, D.R. (37)  
 Kant, R.A. (41, 43, 50)  
 Kao, C. (21)  
 Kapetanakos, C.A. (35, 36, 61)  
 Kaplan, R. (43-45)  
 Karle, I. (57)  
 Karle, I.L. (11, 57, 58)  
 Karle, J. (57)  
 Karpen, J.T. (52-54, 56)  
 Kashyap, R.L. (4)  
 Kassim, N.E. (53, 55)  
 Katz, G. (28)  
 Katzer, D.S. (41, 43, 50)  
 Kaufman, I. (16)  
 Kaufman, M. (10)  
 Kaxiras, E. (40, 47, 50)  
 Keane, C.J. (37)  
 Kearney, K.J. (21)  
 Keating, G.M. (5)  
 Keenan, F.P. (54)  
 Keller, M.R. (37)  
 Keller, W.C. (18, 25, 37, 38)  
 Kellogg, J.C. (16, 36)  
 Kelly, F.J. (54)  
 Kelner, G. (17)  
 Kennedy, T.A. (38-40, 46, 47, 50)

- Kepple, P.C. (34, 68)  
 Kersey A.D. (69)  
 Kersey, A. (25)  
 Kersey, A.D. (21, 25-27, 70)  
 Keskinen, M.J. (5)  
 Ketterson, J.B. (4)  
 Keuthan, L. (60)  
 Khan, H.R. (32)  
 Khanna, S.M. (16)  
 Kidd, J.M. (25, 66)  
 Kidwell, D. (70)  
 Kidwell, D.A. (59)  
 Kiehn, G. (49, 50)  
 Killian, K.W. (35, 63)  
 Kim, C. (23, 31, 32, 45, 51)  
 Kim, K.H. (31, 41, 44, 51, 52)  
 Kim, O.K. (66)  
 Kim, Y.K. (33)  
 King, W.E. (24)  
 Kingston, A.E. (34)  
 Kinkead, A.K. (15, 35, 63, 64)  
 Kinzer, R.L. (54)  
 Kirby, G.C. (22, 60)  
 Kirchoefer, S.W. (44, 46)  
 Kiriakidis, G. (15)  
 Kirkland, J.P. (52)  
 Kirkpatrick, D.A. (14, 15, 35, 63)  
 Klein, B.M. (45, 50)  
 Klein, P.H. (50)  
 Klein, R.B. (16)  
 Klempner, D. (1)  
 Klobuchar, J.A. (5, 61)  
 Klug, R.B. (16)  
 Klusty, M. (11, 67)  
 Knudson, A.R. (15, 41, 46)  
 Kodis, M.A. (14)  
 Kolbe, R. (59)  
 Kondracki, L. (18)  
 Kong, J.A. (37)  
 Koo, K.P. (18, 21, 28, 29, 71)  
 Koon, N.C. (24, 46)  
 Kotliar, A.M. (48)  
 Kowalski, M.P. (55, 56)  
 Krakauer, H. (39, 40, 44, 45, 49, 51)  
 Krall, J. (14, 30, 33, 36, 61, 62, 64, 66, 67)  
 Krebs, J.J. (31, 39, 45, 46, 70)  
 Kresin, V.Z. (39, 45, 47)  
 Kretschmer F.F. (69)  
 Kretschmer, F. (63)  
 Kretschmer, F.F. (37, 62)  
 Krinsky, J.A. (27)  
 Krishnan, M. (33)  
 Krowne, C.M. (70)  
 Kruer, M.R. (28, 29)  
 Kruppa, W. (43)  
 Kub, F. (32, 49)  
 Kub, F.J. (13, 16, 25, 28)  
 Kub, F.J. (13, 16, 25, 28, 71)  
 Kudumas, M. (15, 44)  
 Kukolich, S.G. (11)  
 Kulcinski, G.L. (23)  
 Kunkel, K.E. (65)  
 Kuperman, W.A. (2, 3, 25)  
 Kusterbeck, A.W. (6)  
 Kyser, R.H. (14, 15)  
 LaBrecque, J. (17)  
 LaBrecque, J.L. (17)  
 Lach, E. (49, 50)  
 Ladouceur, H.D. (9, 10)  
 Lagakos, N. (28, 71)  
 Lakshmanasamy, S. (27)  
 Lakshmanasmy, S. (70)  
 Lamarre, E. (37)  
 Lambrakos, S.G. (14, 32)  
 Lampe, M. (64, 67)  
 LAN, G.L. (17)  
 Landis, A.F. (71)  
 Landman, U. (22)  
 Landry, J. (29)  
 Lang, J. (54)  
 Lang, S. (6)  
 Langworthy, J.B. (38)  
 Lansari, Y. (42)  
 Lanzafame, G. (53)  
 Larson, R.E. (4)  
 Laskey, K.J. (67)  
 Lau, K.S.Y. (71)  
 Lau, Y.Y. (14, 29, 30, 33-36, 66)  
 LaVigna, A. (64)  
 Lawrence, J.L. (54)  
 Lawrence, R.K. (16, 44, 51)  
 Lawrence, S.H. (41)  
 Lean, J.L. (52, 53, 56)  
 Leavitt, R.P. (45)  
 Lechter, W.L. (32, 38, 42, 47)  
 Lee, F.W. (60)  
 Lee, G.F. (9)  
 Lee, J.K. (24)  
 Lee, J.N. (70)  
 Lee, J.S. (18, 52)  
 Lee, K.P. (46)  
 Lee, R. (14)  
 Lee, R.C. (15, 67)  
 Lee, W.M. (8)  
 Lehecka, T. (20)  
 Lehmberg, R. (19)  
 Leimer, L.M. (7)  
 Leisawitz, D.T. (55)  
 Leising, M.D. (54)  
 Len, L.K. (35, 36, 61)  
 Lengsfeld, B.H. (7)  
 Leonard, J.T. (63)  
 Leonov, P. (30, 32, 49)  
 Les, J.M. (59)  
 LeTourneau, V. (48)  
 Levine, M. (18)  
 Levush, B. (34, 36)  
 Levy, M. (4)  
 Lewis, B.L. (69)  
 Lewis, D. (6, 7)  
 Li, M.C. (14)  
 Liang, G. (30)  
 Liao, J.C. (50)  
 Liebenberg, D.H. (21)  
 Light, B. (65)  
 Ligler, F.S. (6, 9)  
 Lin, F.L.C. (37)  
 Lin, S.W. (4)  
 Lin, Z. (49)  
 Lin-Chung, P.J. (50)  
 Lind, K.R. (54)  
 Lind, R.W. (4)  
 Lindemann, G.J. (25)  
 Lindstrom, E.R. (20)  
 Lippincott, W. (20)  
 Little, R. (8)  
 Little, R.C. (60)  
 Liu, H. (48)  
 Liu, X. (31)  
 Liu, X.C. (39)  
 Lloyd, I.K. (6, 47, 49)  
 Lloyd, S.A. (18)  
 Lo, S.L. (10)  
 Lohrmann, D.R. (60)  
 Loicher, H. (5)  
 Long, F.M. (16)  
 Long, J.P. (48, 51)  
 Looney, L.D. (27)  
 Loschialpo, P. (35, 36)  
 Louat, N.P. (47)  
 Lovas, F.J. (11)  
 Lowrey, A. (6)  
 Lu, G. (25)

- Lubbes, H.O. (12, 13)  
 Lubitz, P. (23, 30, 41, 44, 46)  
 Luccid, S.W. (56)  
 Lucke, R.L. (53)  
 Luedtke, W.D. (22)  
 Lugger, P.M. (53)  
 Luhmann, J.G. (56)  
 Luhmann, N.C. (20)  
 Luker, L.D. (3)  
 Lund, P.A. (54)  
 Lupton, W.H. (16)  
 Lynn, J.G. (20, 21)  
 Lyons, P.B. (27, 29)  
 Ma, D.I. (52, 70)  
 MacGowan, B.J. (37)  
 Mack, E.J. (4)  
 Mack, I.A. (13, 14, 16)  
 Mack, I.A.C. (70, 71)  
 Madala, R.V. (67)  
 Mahanti, S.D. (49)  
 Mahon, R. (25, 26, 28, 29, 33)  
 Majewski, S.R. (56)  
 Mak, C.L. (47)  
 Mako, F. (64, 67)  
 Malik, S.K. (21)  
 Mandelzweig, V.B. (29, 30)  
 Mango, R. (49, 51)  
 Mango, S.A. (18)  
 Manheimer, W. (62)  
 Manheimer, W.M. (14, 15, 34-37, 63, 64, 67)  
 Manka, C.K. (19, 36)  
 Manning, I. (33, 52)  
 Manson, J.R. (30, 31)  
 Manuccia, T.J. (1)  
 Marable, W. (19, 61, 63)  
 Marable, W.P. (20)  
 Marchand, A.P. (58)  
 Margrove, J.L. (11)  
 Mariska, J.T. (54)  
 Marks, K.M. (18)  
 Marmorino, G.O. (4, 17)  
 Marquardt, C. (12)  
 Marquardt, C.L. (19, 20, 26, 71)  
 Marrian, C.R. (44)  
 Marrian, C.R.K. (14, 31, 44, 46)  
 Marrone M.J. (69)  
 Marrone, M.J. (25, 27)  
 Marsh, S.J. (35, 36)  
 Marshall, W.E. (63)  
 Martinez, A. (27)  
 Maruyama, B. (7, 29, 41, 51)  
 Masumura, S. (61)  
 Mathew, J. (14, 35, 36, 60)  
 Matic, P. (22, 24, 60)  
 Matsumura, K. (11)  
 Mattingly, M. (14)  
 Matuszko, J.S. (60)  
 Matz, S.M. (54)  
 Maurice, D.R. (24)  
 Max, M. (62)  
 Maxwell, T. (13)  
 Mazhari, B. (39)  
 McCabe, G.H. (29)  
 McCafferty, E. (9, 23, 65)  
 McCann, S.M. (54)  
 McCarrick, M.J. (4)  
 McCarthy, D.M. (14)  
 McCowan, R.B. (34, 65)  
 McDermott, J.P. (13)  
 McDonald, B.E. (3, 25)  
 McDonald, J.R. (8, 12)  
 McElvany, S.W. (9, 11)  
 McGee, W.W. (9)  
 McGonigal, M. (9)  
 McGrath, K.J. (10)  
 McIver, J.W. (8)  
 McKinney, K.R. (7)  
 McLarty, P.K. (39)  
 McLean, E.A. (36)  
 McLean, J. (13)  
 McMarr, P.J. (50)  
 McMillan, S.L.W. (55)  
 McMorrow, D. (26)  
 McMorrow, D.P. (41, 46)  
 McNally, P.J. (15)  
 McWilliams, J.C. (25)  
 Meadows, C. (13)  
 Medsker, L. (13)  
 Meger, R.A. (31)  
 Mehl, M.J. (38, 40, 45, 50, 51)  
 Mehlman, G. (36, 66)  
 Meier, R.R. (5)  
 Melville, W.K. (18, 37)  
 Menton, R.T. (1)  
 Mermelstein, M. (25)  
 Merritt, C.D. (8, 22, 25)  
 Merzbacher, C.I. (26, 43)  
 Messina, D.C. (54)  
 Metler, W.A. (67)  
 Metzbower, E.A. (23, 24)  
 Meulenberg, A. (15)  
 Meyer, J.R. (27, 28, 38, 40, 42-46, 51)  
 Meyers, W.D. (15)  
 Michel, D.J. (23, 24, 32, 49)  
 Michel, S. (24)  
 Michelakis, C. (15, 44)  
 Michelson, P.F. (53, 55)  
 Microcomputer Software (63)  
 Middleditch, J. (56)  
 Mied, R.P. (25)  
 Mignerey, P. (4)  
 Mignerey, P.C. (3)  
 Mignogna, R.B. (4, 48, 52)  
 Miklos, R. (28)  
 Miller, A.R. (22, 63, 67)  
 Miller, B.R. (56)  
 Miller, J.B. (9-11, 18, 44, 46, 51)  
 Miller, M.M. (31, 41)  
 Minner, R. (34)  
 Mintmire, J.W. (7, 9, 10, 31, 44)  
 Mitchell, H.G. (5)  
 Mitsuda, K. (53)  
 Mizuta, M. (47)  
 Modolo, J.A. (28)  
 Moeller, R.P. (26)  
 Mohr, D.L. (20)  
 Molnar, B. (17, 47, 49)  
 Molnar, J.A. (4, 60, 62, 66)  
 Montague, C.E. (10)  
 Montgomery, D. (17)  
 Monts, D.L. (27)  
 Moodenbaugh, A.R. (40)  
 Moon, D.W. (23)  
 Moon, K.K. (13, 16, 71)  
 Moore, A.P. (13, 14)  
 Moore, C.S. (71)  
 Moore, F. (39)  
 Moore, F.G. (49)  
 Moore, W.J. (39, 44)  
 Morgan, D.V. (15, 44)  
 Morgan, M.A. (72)  
 Morris, R.E. (9, 10)  
 Morrish, A.A. (30, 42, 43)  
 Moser, P.J. (14)  
 Mosher, D. (31, 35-37)  
 Moskowitz, I.S. (13, 64)  
 Mostovych, A.N. (21)  
 Mowery, R.C. (7, 44)  
 Mowery, R.L. (11, 32)  
 Mozurkewich, D. (52, 55)  
 Mrstik, B.J. (16, 50)  
 Mueller, D.R. (32)

- Mueller, G.P. (33, 48)  
 Mulville, K.T. (32)  
 Mushrush, G.W. (8-10)  
 Musman, S.A. (3)  
 Myers, M.C. (31)  
 Nagel, S.R. (56)  
 Nagumo, M. (6, 10)  
 Nahm, S. (51)  
 Namboodiri, K. (6)  
 Nash, T. (33)  
 Natishan, P. (24)  
 Natishan, P.M. (9, 23, 65)  
 Neidert, R.E. (17)  
 Neiser, R.A. (52)  
 Nelson, H.H. (7, 8, 11, 12, 40)  
 Nemes, J.A. (22)  
 Newkirk, M.H. (37)  
 Newman, D.A. (36, 66)  
 Newman, H.S. (49)  
 Newman, P. (44)  
 Ngai, K.L. (8, 14, 29, 39)  
 Nicol, M.F. (42)  
 Niles, E.W. (46)  
 Nisenoff, M. (43)  
 Nishimura, C. (18)  
 Noci, G. (53)  
 Nordquist, P.E.R. (71)  
 Norris, J.P. (53, 55, 66)  
 Novakoski, L.V. (11)  
 Nowak, W.B. (40)  
 Numrich, S.K. (4)  
 Oakes, D.B. (50)  
 Obenschain, S. (19)  
 Obenschain, S.P. (20)  
 Ohuchi, F.S. (7, 29)  
 Oliver, S.A. (40)  
 Olivero, J.J. (5)  
 Omaggio, J.P. (14)  
 Onstott, J.R. (27)  
 Opal, C.B. (53)  
 Oran, E. (61, 62, 64)  
 Oran, E.S. (8, 32, 64, 67)  
 Orman, M. (31)  
 Ortiz, J.V. (9)  
 Ortman, B.J. (11)  
 Osburn, J.E. (50)  
 Osofsky, M. (32)  
 Osofsky, M.S. (32, 38, 42, 43, 47, 48)  
 Ossakow, S.L. (5, 65)  
 Ott, E. (67)  
 Ottinger, P.F. (36, 37)  
 Ouellette, R.J. (63, 66)  
 Pace, M.D. (6, 61)  
 Padalia, B.D. (21)  
 Page, M. (7, 8, 12)  
 Palkuti, L. (32, 49)  
 Palkuti, L.J. (30)  
 Palmadesso, P. (5)  
 Palmadesso, P.J. (5)  
 Pan, X.P. (55)  
 Panagia, N. (55)  
 Panayappan, R. (70)  
 Pande, C.S. (24, 32, 38, 45, 47)  
 Pande, S. (8)  
 Pao, C.K. (17)  
 Pao, P.S. (23, 49)  
 Papaconstantopoulos, D.A. (39, 41, 42, 48, 50, 51)  
 Papanicolaou, N.A. (16, 28, 70)  
 Parent, D.C. (11)  
 Parent, M.G. (62)  
 Park, D. (41)  
 Park, E.K. (12)  
 Park, G.S. (15)  
 Park, S.Y. (14, 15)  
 Parker, R.K. (14, 16)  
 Partin, D.L. (28, 46)  
 Pasternack, L. (11)  
 Pati, Y.C. (41)  
 Patnaik, G. (8, 67)  
 Pattabiraman, N. (6, 57)  
 Pattnaik, A. (23, 38, 49)  
 Paul, D.W. (27)  
 Pauley, D.J. (11)  
 Paulsen, P.J. (7)  
 Pawley, C. (19)  
 Payne, C.N. (13)  
 Pazik, J.C. (71)  
 Peckerar, M.C. (14, 41, 52)  
 Pecora, L.M. (30, 33, 38)  
 Pederson, M. (42)  
 Pederson, M.R. (17, 38, 39, 41, 46)  
 Peebles, D.L. (63)  
 Peebles, L.H. (10)  
 Peebles, W.A. (20)  
 Peele, J.R. (27)  
 Pehrsson, P.E. (10, 40)  
 Peirce, J.L. (56)  
 Pellegrino, J.G. (32)  
 Pellenbarg, R.E. (25, 71)  
 Pellerino, J.G. (48)  
 Penner, S. (20)  
 Penner-Hahn, J.E. (11)  
 Pereira, N.R. (34, 37)  
 Perkins, J.S. (2, 3)  
 Perkowitz, S. (30)  
 Pershing, D.E. (18, 20)  
 Perzanowski, D. (63)  
 Peters, M. (17)  
 Peters, W.C. (10)  
 Petrie, S. (3)  
 Petrou, A. (31, 39)  
 Peyrard, M. (32)  
 Peyser, P. (10)  
 Peyser, T.A. (31)  
 Pfeiffer, S. (12)  
 Phelleps, F.R. (15)  
 Phillips, K.J.H. (54)  
 Phillips, L. (17)  
 Phillips, P.M. (16, 31)  
 Photiadis, D.M. (3)  
 Pickenpaugh, E.A. (60)  
 Pickett, W.E. (39-42, 49, 51)  
 Picone, J. (62)  
 Picone, J.M. (14, 17, 31, 52, 56, 59, 61, 64)  
 Pinneo, J.M. (34)  
 Pipitone, F. (4)  
 Piquette, J.C. (2, 3, 22)  
 Plano, L.S. (34)  
 Plant, W.J. (18, 25)  
 Plante, D.R. (3)  
 Plazek, D.J. (29)  
 Poche, L.B. (3)  
 Poe, G.A. (55, 56)  
 Pollack, G. (44)  
 Pollak, D. (48)  
 Pond, J.M. (14-16)  
 Potamianos, C.N. (39)  
 Potter, B. (63)  
 Pramanik, S. (62)  
 Prasad, R.R. (33)  
 Prasad, S.K. (12)  
 Prather, K.A. (11)  
 Preston, F.L. (67)  
 Price, G. (43)  
 Price, R. (6)  
 Price, R.R. (6)  
 Price, S.D. (54)  
 Priest, R.G. (22)  
 Prinz, G.A. (21, 31, 39, 43, 45, 46, 50, 51, 70)  
 Prokes, S.M. (39, 40, 43, 45, 47, 69)

- Pronko, M. (19)  
 Provenzano, V. (40)  
 Puckett, R. (24)  
 Pulsifer, P.E. (64)  
 Purcell, W.R. (54)  
 Pureza, P. (28)  
 Pureza, P.C. (6)  
 Qadri, S.B. (23, 30-32, 42, 44, 45, 48, 50-52)  
 Quarles, G.J. (19, 20, 26, 71)  
 Quentel, S. (12)  
 Rabenberg, L. (7, 29)  
 Rabinovich, W.S. (19)  
 Rabinovici, R. (6)  
 Rachford, F. (31)  
 Rachford, F.J. (38)  
 Rai, A.K. (45)  
 Rains, T.C. (7)  
 Rajagopal, A.K. (8, 18, 39, 49)  
 Ram-Mohan, L.R. (38, 40)  
 Raman, S. (5)  
 Ramsey, C.L. (4)  
 Ran, Q.Z. (4)  
 Randles, P.W. (22)  
 Randolph, A.S. (6)  
 Rao, M.V. (39, 45)  
 Rath, B.B. (22-24, 30, 43)  
 Rauscher, C. (47)  
 Raymond, C. (17)  
 Raymond, J.C. (53)  
 Rayne, R. (32)  
 Rayne, R.J. (41)  
 Reader, J. (37)  
 Reed, J.R. (24)  
 Reese, R. (31)  
 Reeves, M.E. (43)  
 Reilly, M.H. (6)  
 Reimann, C.T. (26)  
 Reinecke, T.L. (40, 43, 44, 49-51)  
 Reintjes J.F. (69)  
 Reintjes, J. (25, 26, 28, 29, 33)  
 Reintjes, J.F. (28, 29)  
 Rendell, R.W. (14, 39)  
 Revesz, A.G. (43)  
 Rexford, J.L. (34)  
 Rhee, K. (41)  
 Rheingold, A.L. (12)  
 Rhinewine, M. (16, 64)  
 Rice, J. (11)  
 Rice, J.K. (8, 10, 12)  
 Rice, R.W. (7)  
 Richards, C. (71)  
 Richards, L.E. (32, 47)  
 Richmond, E.D. (32, 33, 48)  
 Richter, S.H. (31)  
 Rickard, L.J. (54, 55)  
 Rife, J.C. (45, 48, 51)  
 Riley, K.J. (19)  
 Rilling, W.K. (41)  
 Ripin, B.H. (36, 66)  
 Rittenmyer, K.M. (7)  
 Ritter, J.C. (38, 43)  
 Ritter, J.J. (41)  
 Ritz, V.H. (14)  
 Riyopoulos, S. (19, 63)  
 Roberson, C.W. (19, 21)  
 Robinson, A. (27)  
 Robinson, A.K. (50)  
 Robson, A.E. (33-37)  
 Roditi, E. (50)  
 Roe, M.G. (20)  
 Roelant, D. (19, 68)  
 Rogers, J.C.W. (17)  
 Rogerson, J.E. (33)  
 Roh, J.D. (44)  
 Roland, C.M. (7-10, 20, 48, 70)  
 Rolison, D.R. (12)  
 Romano, A.J. (3)  
 Romans, J. (8)  
 Rose, J.E. (20)  
 Rosen, M. (48)  
 Rosenau, T.J. (60, 62, 65)  
 Rosenbaum, A. (20, 26)  
 Rosenblatt, G. (20)  
 Rosenblatt, G.H. (19)  
 Rosenblum, L.J. (4)  
 Rosenfeld, R.N. (11)  
 Rosenstock, H.B. (63)  
 Rostoker, N., ed. (34)  
 Roussos, J.A. (15)  
 Rowe, M.W. (48)  
 Rowland, H.L. (5)  
 Rubensson, J.E. (32)  
 Rubinstein, M. (41)  
 Rudgers, A.J. (1)  
 Rudin, S. (40, 43, 44, 51)  
 Rudolph, A.S. (6)  
 Rudolph, B.R. (6)  
 Ruggiero, N.G. (31)  
 Ruller, J.A. (26, 38)  
 Russell, C.T. (56)  
 Ryan, J.C. (41, 50)  
 Ryu, J. (45)  
 Saams, J.R. (63)  
 Sachon, M.G. (10, 28, 30)  
 Sadananda, K. (23, 39, 47, 48)  
 Sadeghi, H.R. (48, 51)  
 Saks, N.S. (14, 16, 17)  
 Salama, K. (21)  
 Salamanca-Riba, L. (51)  
 Samarth, N. (50)  
 Samuels, M.Q. (1)  
 Sanday, S.C. (22, 61)  
 Sanders, W.A. (10)  
 Sanghera, J.S. (10, 28, 30)  
 Sarkady, K.A. (28, 29)  
 Sarkissian, A. (1-3)  
 Sarma, B.K. (4)  
 Sarteschi, C.F. (4)  
 Sartwell, B.D. (25, 39, 43, 50)  
 Sashegyi, K.D. (67)  
 Satyanarayana, P. (5)  
 Savage, H.T. (18)  
 Scales, W.A. (5)  
 Scanlon, J. (16)  
 Schafer, L. (27)  
 Scherrer, V.E. (31, 36)  
 Schetzina, J.F. (27, 42, 46)  
 Schlapp, W. (49, 50)  
 Schlesinger, T.E. (23, 32, 38, 45)  
 Schmidt, W.H. (27)  
 Schmitt, A.J. (20)  
 Schneider, I. (21, 70)  
 Schneider, W. (27)  
 Schnur, J.M. (9)  
 Schoen, P. (31)  
 Schoen, P.E. (14)  
 Schroeder, D.J. (56)  
 Schuetz, L. (1)  
 Schuler, D.L. (25)  
 Schulman, J.N. (42)  
 Scribner, D.A. (28, 29)  
 Searles, S.K. (21, 27, 65)  
 Seaver, M. (1, 27)  
 Seaver, M.E. (26)  
 Seely, J.F. (32, 34, 37, 52)  
 Segall, B. (51)  
 Seib, K.D. (9)  
 Seitzman, L.E. (23)  
 Selvamanickam, V. (21)  
 Semper, P.A. (2)  
 Serafim, P. (64, 67)  
 Serlin, V. (14, 30, 33, 36, 66)  
 Sethian, J.D. (35, 37)

- Severance, C. (62)  
 Shah, S. (39)  
 Shahinian, P. (23)  
 Shanabrock, B.V. (70)  
 Shanabrook, B.V. (39, 41, 43-45, 47, 50)  
 Shanfield, Z. (16)  
 Shanley, J.H. (63)  
 Shanlov, A.A. (15)  
 Shao, M. (55)  
 Shapiro, M.M. (54, 56)  
 Share, G.H. (54)  
 Shashidhar, R. (9, 12)  
 Shaulov, A.A. (48)  
 Shaw, C.M. (27)  
 Sheeley, N.R. (53, 54, 56)  
 Sheinson, R.S. (11)  
 Shelby, R. (49, 51)  
 Shen, C.Y. (25)  
 Sherriff, B.L. (43)  
 Shipman, J.D. (16)  
 Shirey, L.M. (49)  
 Shirk, J. (12)  
 Shirley, D.E. (25)  
 Shontz, G.J. (44)  
 Shortt, D.J. (15)  
 Shrewsbury, D.J. (56)  
 Shuker, R. (32)  
 Sichel, M. (8)  
 Siddons, D.P. (21)  
 Siders, C.M. (61)  
 Sigalas, M. (51)  
 Sikes, A.M. (7)  
 Silberberg, R. (53, 54, 56)  
 Sillmon, R.S. (18)  
 Sills, L. (28)  
 Simon, R.S. (55)  
 Simons, D.S. (45)  
 Singer, A.H. (71)  
 Singer, I.L. (31, 49)  
 Singh, A. (6, 9)  
 Singh, D. (39, 41, 42, 48, 51)  
 Skelton, E.F. (30, 41, 42, 44, 48)  
 Skolnik, M.I. (37, 38, 63)  
 Skorupka, C.W. (30, 31)  
 Skowronek, A.E. (51)  
 Slinker, S. (59-62, 66, 68)  
 Slinker, S.P. (34, 59-62, 64-66)  
 Smathers, H.W. (66)  
 Smidt, F.A. (25)  
 Smith, B. (15)  
 Smith, D. (27)  
 Smith, G.C. (21)  
 Smith, H.H. (23)  
 Smith, K. (35, 36)  
 Smith, R. (49)  
 Smith, S.T. (31)  
 Smith, T. (15, 35, 36)  
 Smith, W.A. (15, 48)  
 Smuda, J. (6)  
 Smuda, J.W. (9)  
 Snail, K.A. (42)  
 Snow, A. (71)  
 Snow, A.W. (10, 11)  
 Snow, E.S. (44, 50)  
 Snyder, W.A. (56)  
 Soicher, H. (61)  
 Sokilich, M. (17)  
 Sommers, J.A. (8)  
 Sonnenschein, M.F. (20, 48, 70)  
 Sooryakumar, R. (47)  
 Sorathia, U. (9)  
 Soroushnejad, M. (65)  
 Soto, M.R. (8)  
 Soulen, R.J. (32, 41, 44, 52)  
 Spadaro, D. (53)  
 Spann, J.R. (47, 49)  
 Spanos, G. (23)  
 Spears, W. (4)  
 Spears, W.M. (4)  
 Spencer, M.G. (47)  
 Sperling, L.H. (9)  
 Spezio, A.E. (29)  
 Sprague, J.A. (41)  
 Sprangle, P. (19-21, 34-36, 60, 61, 63, 64, 67)  
 Sprangle, P.A. (14)  
 Spryn, G. (1)  
 Squire, D. (10)  
 Sramek, R.A. (55)  
 Srivatsan, T.S. (22)  
 Stack, G.M. (8, 30)  
 Stahl, W. (11)  
 Stahlbush, R. (40)  
 Stahlbush, R.E. (16)  
 Stalick, W.M. (8)  
 Stanton, C.T. (7)  
 Stapor, W.J. (2)  
 Staudaheer, F.M. (37)  
 Steiner, M.J. (62, 63)  
 Stelmack, L. (24)  
 Stemwedel, S.W. (54)  
 Stephanakis, S.J. (31, 36)  
 Sterling, A.C. (54)  
 Stern, K.H. (12)  
 Stern, T.G. (17)  
 Stesmans, A. (43)  
 Stewart, G.R. (31)  
 Stewart, M.B. (62, 65)  
 Stewart, R.H. (37)  
 Stilwell, D. (62)  
 Stockton, W. (31)  
 Stockton, W.B. (14)  
 Stolovy, A. (66)  
 Stoneman, R.C. (20, 21, 26, 71, 72)  
 Strobel, D.F. (5)  
 Strom, U. (30, 48)  
 Stupp, B.C. (31)  
 Sucy, M. (15, 35, 63, 64)  
 Sucy, M.S. (35)  
 Suda, A. (19)  
 Sudarshen, T.S. (22)  
 Suenram, R.D. (11)  
 Sukumar, M. (57)  
 Sullivan, C.A. (65)  
 Summers, M.E. (5)  
 Summers, W.H. (38)  
 Sundaresan, R. (44)  
 Support Center (63)  
 Swartzendruber, L.J. (41)  
 Switendick, A.C. (51)  
 Syverson, P. (13)  
 Syverson, P.F. (63)  
 Szu, H. (13)  
 Szu, H.H. (13, 16, 71)  
 Taffe, P.A. (62, 63)  
 Tang, C.M. (19, 20, 61-64, 67)  
 Tang, C.T. (19, 20)  
 Tankersley, L.L. (25, 26, 28, 29, 33)  
 Tannous, E. (16)  
 Taylor, D.J. (14)  
 Taylor, E.W. (27, 29)  
 Taylor, R.D. (34, 59-61, 64, 66)  
 Taylor, S.G. (9)  
 Teitler, S. (8, 18)  
 Teolis, A. (41)  
 Terry, R.E. (59)  
 Tevault, D.E. (71)  
 Theobald, M.L. (17)  
 Thoet, W. (12)  
 Thomas, R.E. (17)  
 Thompson, C.M. (2, 3, 6, 7, 9)

- Thompson, P.E. (15, 38-40, 42, 44, 45)  
 Thompson, R.B. (18)  
 Thornhill, J.W. (19, 33, 35, 37, 68)  
 Thorpe, T.P. (42)  
 Thorsheim, H.R. (28, 34)  
 Thrush, C.M. (28, 46)  
 Thurow, A. (63)  
 Thurow, A.R. (62)  
 Timme, R.W. (4)  
 Ting, A. (19, 21, 34-36, 63)  
 Ting, A.C. (14)  
 Ting, R.Y. (1, 2, 7, 15, 39, 48)  
 Tolstoy, A. (1, 2)  
 Tolstoy, I. (2)  
 Toth, L.E. (32, 41, 47)  
 Trask, C.A. (7, 10)  
 Travis, J.C. (62)  
 Treanor, R. (6)  
 Tritt, T.M. (30, 38, 40)  
 Trivett, D.H. (3)  
 Troesch (62)  
 Trombetta, J.M. (39, 40, 46, 47)  
 Trump, C.L. (3)  
 Trunk, G.V. (37)  
 Trusty, G.L. (65)  
 Trzaskoma, P.P. (9, 11)  
 Tsai, T.E. (28, 49)  
 Tsao, C.H. (53, 56)  
 Tseng, W. (44)  
 Tseng, W.F. (69)  
 Tucker, J.E. (20)  
 Turner, N.H. (9, 11, 12, 52)  
 Turner, R. (46)  
 Turquet de Beaugard, G.Y. (27)  
 Tveten, A.B. (59)  
 Twigg, M.E. (30, 32, 44, 46, 48, 49, 51)  
 Tylka, A.J. (52)  
 Tzanetakis, P. (48)  
 Tzioumis, A.D. (53)  
 Uberall, H. (14)  
 Uberall, H.E. (38)  
 Uhlmann, J.K. (59, 61, 62, 65)  
 Uliana, E.A. (37)  
 Ulmer, M.P. (55, 56)  
 Uma, K. (57, 58)  
 Unger, B.A., ed. (49)  
 Van Buren, A.L. (1, 3)  
 Van Damme, P.K. (49)  
 Van Vechten, D. (42, 48)  
 Vandermeer, R.A. (23, 24)  
 Vanderplaats, N.R. (14, 16)  
 Vaughan, B.A. (53, 55)  
 Vecter, F. (55)  
 Vegh, E. (67)  
 Verschuur, G.L. (55)  
 Vijayaraghavan, R. (21)  
 Villa, E. (10, 11)  
 Vittoria, C. (40)  
 Vivekanand, M. (55)  
 Vogel, C.W. (6)  
 Vogt, P.R. (18)  
 Vohra, S. (28, 29)  
 Vold, C.L. (24)  
 Volkening, F.A. (46)  
 Von Stetten, E.C. (51)  
 Wagner, L.S. (4, 15)  
 Wagner, R.A. (32)  
 Wagner, R.J. (40, 42, 44)  
 Walker, R.C. (53)  
 Wallace, J. (32)  
 Wallin, J.F. (53)  
 Wandass, J.H. (11)  
 Wang, H.T. (17)  
 Wang, J. (32, 49)  
 Wang, J.J. (30)  
 Wang, K.L. (17, 39, 40, 43)  
 Wang, M.C. (34)  
 Wang, W.I. (45)  
 Wang, Y.L. (40)  
 Wang, Y.M. (53, 54, 56)  
 Ward, K.B. (57)  
 Wardlaw, W.P. (62, 67)  
 Wark, J.S. (49, 50)  
 Warnock, J. (31, 39)  
 Warzel, M.L. (10)  
 Watanabe, T. (54)  
 Waterman, J. (40)  
 Waterman, J.R. (16)  
 Watkins, J.M. (8, 10)  
 Watrous, J. (37)  
 Wauchope, K. (67)  
 Weaver, P. (14, 15)  
 Weaver, P.F. (16)  
 Weaver, T.S. (59)  
 Weber, B.V. (16, 36)  
 Wechter, M.A. (9)  
 Wegand, J. (31)  
 Weiler, K. (57)  
 Weiler, K.W. (55)  
 Weimann, G. (49, 50)  
 Weiner, B.R. (11)  
 Weis, R.S. (27)  
 Welch J.A. (69)  
 Weller J.F. (69)  
 Weller, J.F. (69-71)  
 Wemhoff, G.A. (6)  
 West, R.H. (27)  
 Wetzel, L.B. (65, 66)  
 Wexler, B.L. (19, 20)  
 Whitcombe, T. (52)  
 Whitcombe, T.V. (4)  
 White, C.T. (9, 10, 12, 44)  
 White, W.B. (43)  
 Whitlock, R.R. (49)  
 Whitney, K.G. (32, 33, 35, 37, 64)  
 Whitney, W.T. (21)  
 Whittaker, J.K. (20)  
 Widing, K.G. (34, 55)  
 Wieselthier, J.E. (12, 59, 64)  
 Wieting, T.J. (63)  
 Wilkin, N.D. (20)  
 Wilkinson, P.N. (53)  
 Williams, C.M. (44)  
 Williams, E.G. (1-3)  
 Williams, G.M. (38)  
 Williams, G.P. (48)  
 Williams, K.J. (15, 28)  
 Williams, R.T. (48)  
 Williamson, M. (3)  
 Wilson, J.D. (37)  
 Wilson, M.A. (20)  
 Wimer, N.G. (32)  
 Winings, M.J. (21)  
 Winske, D. (37)  
 Witt, A.N. (53, 56)  
 Wittwert, C. (13)  
 Witzel, A. (56)  
 Wojtowicz, T. (43-45)  
 Wolf, S.A. (30, 33, 39, 43-45, 47, 52)  
 Wolff, M.T. (54)  
 Wong, A.K. (22, 60)  
 Wong, A.Y. (4)  
 Wood, K.S. (53-55, 57, 66)  
 Wooten, F. (38)  
 Wray, J.D. (54, 56)  
 Wu, A. (48)  
 Wu, C.C. (7, 45)  
 Wun-Fogle, M. (18)  
 Wyatt, J.R. (8, 62, 63)  
 Xia, J. (27)  
 Xie, H. (40)  
 Xu, Y. (40)  
 Yaeger, D.A. (6)

---

Yang, C.Y. (40)  
Yang, T.C. (2)  
Yao, C.T. (16)  
Yaplee, B.S. (37)  
Yen, N.C. (4)  
Yoder, M.N. (69, 72)  
Young, A.M. (4)  
Young, F.C. (31, 36, 68)  
Young, M.A. (60)  
Young, R.M. (1)  
Youngdale, E.R. (27, 28, 46)  
Yu, H.Y. (22, 31, 51, 61)  
Yu, T.L. (6)  
Yurek, A.M. (26, 59)  
Yurek, G.J. (23)  
Zagarino, P. (27)  
Zagiel, A. (24)  
Zaidman, E.G. (14, 16)  
Zalesak, J.F. (3)  
Zalesak, S.T. (5)  
Zang, T.A. (64)  
Zappala, R.A. (53)  
Zetl, A. (40)  
Zhang, C.H. (32)  
Zhao, Z. (4)  
Zhu, X. (5)  
Zigler, A. (61)  
Zimmerman, D. (56)  
Zuniga, M.R. (59, 61)